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Cum permissu superiorum.

THE CAUSATION OF KNOWLEDGE IN THE PHILOSOPHY OF PETER JOHN OLIVI, O.F.M.

According to his *Commentary* on the *Second Book of the Sentences* and the *Quaestiones de Deo Cognoscendo*

I INTRODUCTION

Father Olivi would describe the act of cognition as the actual, immediate expression of an object, accompanied by a certain formal and actual assimilation by the knowing subject. This assimilation could take place by the inspection of a remembered species, by "Divine Illumination," or by a natural *colligantia.*

Cognition which results from the consideration of a ***remembered*** species is essentially the same as cognition of *sensible* things. The only difference between the two types of knowledge is that a remembered species rather than a sensible object terminates the active power.[1]

II DIVINE ILLUMINATION

The last representatives of the First Franciscan School,[2] though avid supporters of the Illumination theory, were becoming more aware of its inherent difficulties. Was the Illumination a supernatural grace or a natural gift? Did it replace or elevate man's natural ability to know?

Peter Olivi adhered to this doctrine of Illumination, but he was enough of an iconoclast to admit that many objections against it were unanswerable.[3] In the second question *On Knowing God,* he defends

[1] How this takes place will be treated more fully under "Natural Cognition" (section 3). Cf. P. J. Olivi, O. F. M., *Quaestiones in IIum Librum Sententiarum,* B. Jansen, S. J., (ed.), (Quaracchi: Colleg. S. Bonaventurae, 1922—1926), III, p. 115; II, p. 281, 485, 507. (Henceforth all citations referring to Olivi's Commentary will be given by volume and page from this Quaracchi edition.)

[2] Matthew of Aquasparta, Bartholomew of Bologna, Roger Marston, etc., cf. E. Gilson, *History of Christian Philosophy in the Middle Ages,* p. 344.

[3] *De Deo Cognoscendo:* III, 512; II, 457

St. Augustine and his theory from attacks by the "Magni."[4] But he concludes his rejoinder by offering five caveats to those professing the doctrine of Divine Illumination: 1. Augustine holds that species in the memory are the prime and immediate object of the intellect. If these are related to the eternal reasons, then we fall into the error of ontologism. Hence the "reasons" cannot be considered as "forms" *of* or *in* our minds.[5] 2. If these "reasons" were immediately represented to us before inspection or cognition (just as the species in the memory), then it would follow that they are immediately seen by us *"eo modo quo error superpositus asserebat."*[6] 3. The "reasons" must not be thought of as natural and total principles or as instrumental and secondary principles of cognition. Otherwise free will would be endangered.[7] 4. We must beware not to destroy the possibility of naturally acquired truth.[8] 5. A Platonic innatism must also be avoided, by which the science of all things is in our intellects by nature from the beginning.[9] In short, although Olivi explicitly states that the thesis of "Illumination" is "famous and sound," he must be understood to accept it with restriction.[10] Practically speaking, he endorses Illumination as a theological doctrine, applying to the rare cases of infused knowledge and to knowledge of the soul after death. And as his lengthy treatise on natural knowledge is unfolded, the lack of emphasis on supernatural help grows strikingly apparent.

III NATURAL KNOWLEDGE

1. *Solidarity of Powers*

Olivi's whole noetic is radically dependent on the doctrine of the solidarity of the powers of the soul. The cognitive act is the result of many powers together as one, just as the motion of a rowed boat is contingent on the many individual motions of the oarsmen.[11] Further, since all the powers in the soul share the same common matter, the "motion" of one power is the same as the motion of the common matter of another power. "For the various movements of the powers contain in their acts and objects connections with one another."[12] This "inner motion" or *colligatio* "consists chiefly in the formal union of the spirit to the body as to its matter and of the body to the spirit as to its form . . . Secondarily the colligation is a "coming together" of many powers of the soul in the same matter of the spiritual soul."[13]

[4] III, 505. ("Magni" is a reference to the well known Scholastics of the 13th Century.)
[5] III, 507. [6] *Ibid.* [7] III, 508—9. [8] III, 511. [9] III, 512.
[10] III, 513. [11] III, 35. [12] III, 34. [13] *Ibid.*; II, 29—35 and I, 291.

2. *Principles of Knowledge*

We have said that for Olivi the cognitive act is the mental expression of some object. This act is produced primarily by the power itself as active, but this does not preclude *all* causality in the object.[14]

> Sua enim causa efficiens potuit sibi dare cum adjutorio terminationis objectivae aliquam similitudinem . . . quam ipsa potentia producens de se non habebat.[15]

This "*adjutorio*," however, does not consist in an impression *BY* the object.[16]

Certain philosophers have held that the acts of the powers are *totally* and *immediately* from the objects themselves.[17] Others say that a species is *derived* from the objects. And still others, like St. Augustine, maintain that the powers are the immediate, effective, and total principles of their acts.[18]

A satisfactory explanation must uphold the intrinsic activity of the soul and recognize the necessary presence of an object. Father Olivi's doctrine neatly sidesteps extreme active and passive positions with all their embarrassments. He contends that the acts of cognition are neither from the object immediately[19] nor from the species alone[20] nor partly from the species and partly from the power.[21] Rather the acts themselves ARE the true species and similitudes.[22] Of itself, however, the soul is unable to generate the species[23] nor is it able to be excited by the object.[24] Wherein then, does the causality of knowledge lie?

a) The causality of the Object of Knowledge

The object is neither efficient, final, nor instrumental cause of cognition. Rather, it is the *termination* of the intellectual act. Olivi employs a variation of the "light metaphor" to explain this "terminative causality" of the object:[25] The light of the sun takes the shape of triangularity or roundness when it is shining in a triangular or spherical vase. The vase itself does not effectively produce the figure of the light, but only "terminatively." In other words, the sun has been able to "make-

[14] III, 124. [15] II, 421. [16] II, 425.
[17] Olivi takes Aristotle to be one of the original of these men, and so he cites a number of passages indicative of the passivity of knowledge: *De Anima:* II, 5, 416b 32; II, 6, 418a 6; II, 12, 424a 17; III, 4, 429a 10.
[18] II, 462; *de Trinitate* (of August.), XI, 2, 5, (PL, 42, 985).
[19] I, 18 sqq; III, 35 sqq. [20] II, 437, 465—6, 473; III, 13, 119.
[21] II, 365, 468. [22] II, 470—3.
[23] Obviously then the *objects* are unable to generate the species: II, 473.
[24] II, 464, 475—7, 26; *Beiträge*, Supplementband III, 886, 891; Olivi: III, 114 sqq. 119—122.
[25] II, 35, 36, 415.

light-formed-in-this-way" by reason of the presence of the vase. Without the *terminus*, such a figure could not have been produced.[26] Likewise the agent intellect[27] is the primary mover, first effective principle, and is always capable of understanding.[28] The object, however, is necessary to terminate the act. The genus of this objective cause is most properly called terminative, for it is neither purely efficient nor final.[29]

b) Sensation

Olivi holds to the Augustinian doctrine of "active sensation",[30] but he demands the PRESENCE of the object. The explanation of sense knowledge is the same as that of cognition, i. e. the sense is the first, and immediate active principle of knowledge, "going outside itself" in a certain way.

Secundum quos potentiae virtualiter protenduntur ad obiecta exteriora et corporalia: pro quanto enim sunt sitae in organis corporeis, pro tanto possunt habere aspectus quasi corporales et quasi situales et corporibus quodam modo proportionales.[31]

"The form of our mind is the power perceiving some object by reason of its nearness or by reason of the nearness of the body to the thing through its (the mind's) spiritual matter."[32]

c) Intellectual Knowledge of Sense Objects

Peter Olivi apparently does not adhere to the real distinction of agent and possible intellect. The intellect is treated as a *single* power which is always capable of acting. The "*acies intellectus*" is an equivalent term for "intellect," "agent intellect," or "intellect-in-its-fullness." This implicit lack of distinction would offer difficulties to a Thomist, which are answerable in a system of "Universal Hylemorphism." For the "acies intellectus" is related to the act of cognition materially and formally. By reason of its form it is the active power, and by reason of its matter it is able to be accidentally informed by the cognitive act.[33]

Since Olivi will allow no *phantasm or species to mediate* in knowledge, he must *somehow* bridge the interval between object and intellect. That the intellective powers *are* active and able to grasp things outside themselves, is a fact of continual experience.[34] When a hand is amputated the soul is "retracted" without any local motion from the hand, which

[26] III, 9.
[27] "Agent Intellect" is used to denote the whole intellect in act.
[28] II, 415, 521, 556, 563 sqq.
[29] III, 37.
[30] II, 7.
[31] II, 512.
[32] II, 431.
[33] II, 514.
[34] III, 124 sqq.

is not of the essence of man. In much the same way, the intellective soul "retracts" its *aspectus* or view of objects which are not of *its* essence. The "going out" and the subsequent "retraction" are effects of the union of a habit of the intellect[35] and of the intrinsic power of the soul to be active. The power, the "aspect," and any habit of the intellect are all one immediate principle of the act of understanding.[36]

The cognitive act or aspect of the object naturally follows the conversion of the intellect to the object. The intellect does not intend to generate this or that act,[37] but in itself is undetermined.[38] Just as a mass of iron can be "spread out," sharpened, and fashioned into a sword, so the cognitive power, which sometimes stands reflecting and "turning into itself"[39] can go outside itself. By "spreading out it is sharpened, because it is acutely intent on some object. This way of existing and having a relation to an object is what we call an aspect."[40] The motion immediately preceding the aspect is the conversion, which is caused either by the will or by a stirring of the sensitive part of the soul.[41]

The soul forms no species through which it knows its object. For "either it is able to generate in itself the species of the object without a conversion . . . and aspect . . . and terminative cooperation of the objects, or not. If so, one essence of itself absolutely taken will be the sufficient principle of an infinite number of species."[42] The resulting knowledge would then be utter confusion, for the intellect would not be terminated or specified.[43] "If the soul is *not* able to generate (the species) without the preceding (helps), it should follow that to generate (the species) is not different from generating the cognitive act . . ."[44] There are no mediating phantasms or species[45] — the species themselves *ARE* the cognitive acts.[46]

It must be kept in mind, however, that in knowledge of sensibles, the root of the appearances is the form.[47] This form is of an *individual* essence, and so although it is assimilated immaterially,[48] it is not without matter.[49]

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[35] III, 75; III, 155, 117, 128.
[36] III, 127.
[37] To-generate-a-species is the same as to-know in Olivi's noetic. Hence the two expressions will be used interchangeably. II, 470; III, 120.
[38] II, 514, 515.
[39] (So that it is attending to no object.)
[40] II, 63.
[41] II, 52—75; III, 66.
[42] III, 120.
[43] (The same object would be seen from every possible view.)
[44] III, 120; Beiträge III, 884.
[45] II, 457; III, 13, 145.
[46] II, 470, III, 123.
[47] II, 450, 452, 455.
[48] I. e., the intellective form takes on an accidental form through a "colligantia."
[49] I, 243.

d) Knowledge of Immaterial Things

Thus far we have only directly treated of the knowledge of sensibles. Olivi, however, has a lengthy treatise on the soul's knowledge of itself. Regarding the knowledge of immaterial things, he holds that we can have knowledge of the soul in two ways. In the first way three things are necessary: 1. the presence of the object, the mind itself, 2. the "aspect" of the intellect on itself, and 3. an *actus sciendi*, which is the result of the whole movement, i. e. a *verbum*.[50] This type gives us knowledge of the soul in its essence. The second way demands many remembered species of men and their actions. This way of knowing involves a correlation of the species into proper genera and distinguishing the *differentia*. The result is knowledge of the soul in its definition.[51] As though to complete his already "Augustinian" explanation of the soul's knowledge of itself, Olivi introduces another factor, viz. personal conviction. He says that he *knows* his own soul partly through an inspiration of the soul. By this he seems to mean an immediate experience, which is actually equivalent to the first way of knowing the soul.[52]

Olivi's doctrine of the knowledge of being would fit into his second way of immaterial knowledge as well as into his first.[53] He has explicitly stated that individual substances *alone* exist, and that universals are only in the mind.[54] But since he *also* emphasizes the direct knowledge of singulars, it would seem that our knowledge of "being" is *direct*. Our knowledge of the *concept* of "being" would be a refinement, comparison, and correlation of previous concepts.[55]

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[50] III, 148; Beiträge, III, 883—4.
[51] III, 148—9.
[52] III, 147.
[53] This whole treatment of knowledge of being is contingent on Olivi's Metaphysics which is treated cursorily in de Wulf's History, p. 382, but which is out of the range of this paper.
[54] I, 213, 226, 250, 259—261, 321.
[55] III, 148—9.

MOTION, TIME AND PLACE ACCORDING TO WILLIAM OCKHAM

CHAPTER FOUR

CONCERNING TIME

1.

Arguments Against Hypostatization of Time

Prior to attempting a direct explication of what he considers to be the true nature of time, Ockham proposes to see what time is *not*;[1] and his strenuous negative statement is of great interest for it yields a positive statement of what the absolute theorists conceived time to be.

"Concerning an instant," Ockham writes at the commencement of his oblique approach to time,

> it is the opinion of many that an instant is a certain flowing thing *(res fluens)* which is steadily destroyed, or lost, so that it does not remain. Whence, they posit that there is continuously another and another instant, and that it is itself a certain thing which cannot possibly remain through time. Indeed, they say it is distinguished from all permanent things.[2]

It follows, however, as a result of positing time's moments to be thus atomic, that serious theoretical incapacities are involved. First, Ockham points out that an infinite number of these discrete, distinct moments would be present in any given time-passage. Since, that is, the continuous character of any time-period allows for its division into an infinite number of arbitrarily small moments, and since each of these moments is posited, by the theory under examination, to be a simple, independently existent, separable unit, there follows the impossible consequence that

[1] *Phil. Nat.*, IV, 1: "Quoniam secundum Philosophum tempus est motus, vel aliquid ipsius motus, ideo post considerationem de motu videndum est de tempore. Ideo videndum est quid sit tempus, et quorum est tempus, et quomodo se habet cum aliis quae sunt ad temporis cognitionem. Antequam videatur quid sit tempus, videndum est quid non est instans, et quid non est tempus."

[2] *Ibid.* In *Tractatus.*, P. 102, Ockham writes: "Videntur enim procedere, ac si nunc sive instans esset aliqua una res distincta realiter secundum se totam a tempore quasi medians inter duas partes temporis distinctas realiter secundum se totas, ita quod tanta esset distinctio realis inter instans et tempus et partes temporis, quanta est modo suo inter ligamen et duo ligata per ipsum, quod est omnino falsum et contra intentionem Philosophi."

any finite time-sequence consists in an infinite number of distinct moments.[3]

Secondly, since there has been no contrary introduced, and since the original cause is still active—nor can the subject of these absolute moments be said to have been destroyed — how can one explain the inexorable passage *out of being* of absolute moment after moment? In other words: *how* are these moments destroyed?[4]

Thirdly, as an absolute existent, the absolute moment must be either a substance or a quality. Being neither matter, nor form, nor a composite of these, it is obviously not a substance. No more, however, can the position that it is a quality be defended; for the patron of any such accident is either divisible, or indivisible, and its patron cannot be held to be divisible, for all the accidents of a divisible subject are similarly divisible, and the absolute theorists have already postulated the atomic, discrete, and *indivisible* character of a moment of time. If, however, they are to grasp at the alternative, and hold that the subject is *not* divisible, their case is again hopeless, for Ockham relentlessly points out that this indivisible subject must be either a substance or an accident; and since it cannot be a substance — being neither corporeal nor incorporeal — it must be an accident. Ockham then, would raise the question concerning the nature of *this* accident's subject, and so on "into infinity."[5]

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[3] *Phil. Nat.*, IV, 1: ". . . si instans sit talis res (i. e., an atomic entity), sequeretur quod in quolibet tempore essent infinitae res secundum se totas distincte et non facientes unum per se; probatur, quia quodlibet instans esset secundum se totum distinctum a quolibet alio, et non faciunt per se unum, et etiam infinita instantia sunt in quolibet tempore, consequens est falsum et impossibile, ergo, etc." See also, *Tractatus.*, p. 120: "Tum quia in tempore finito essent res infinitae secundum se totas distinctae pertransitae;" and *Logic.*, ch. 59, p. 171.

[4] *Phil. Nat.*, IV, 1: ". . . si instans sit talis res statim desinens esse, vel ergo desinit esse ad introductionem sui contrarii, vel subtractionem suae causae, vel ad corruptionem sui subiecti, sed nullum istorum potest dari, sicut inductive patet." See also, *Tractatus.*, p. 120: "Tum quia non posset dari, quomodo talis res possit corrumpi, quia nec per corruptionem sui subiecti nec per inductionem contrarii nec per subtractionem causae conservantis vel per eius absentiam, sicut patet inductive;" and *Altaris.*, p. 51.

[5] *Tractatus.*, p. 120: "Et quod instans non sit talis res raptim transiens secundum se totam distincta ab omni re permanente, sicut moderni ponunt, ostendo breviter sic: tum quia aut est substantia aut accidens; non substantia, quia nec materia nec forma nec compositum. Nec accidens, quia quaero de subiecto eius primo: aut est divisibile aut indivisibile. Non primum, quia quando subiectum primum est divisibile, ipsum accidens existens in eo est divisibile. Si detur secundum, scilicet quod subiectum primum est indivisibile, tunc quaero de isto subiecto: aut est substantia aut accidens; non primum, quia nec substantia corporea nec incorporea, sicut patet inductive; nec accidens, quia quaerendum est de subiecto eius primo, et sic in infinitum." The same argument can be found in *Phil. Nat.*, IV, 1, with this deviation: "tum quia esset subiectum instantis divisibile, cum non

Finally, Ockham invokes the principle of economy. Since every physical situation involving the passage of time can be "save" without positing the existence of such an entity as an absolute moment of time — what conceivable service does the postulation of such an entity perform?

> Everything which can be explained *(possunt salvari)* through such a thing (i. e., the absolute moment), can be explained through this: that the heavens, according to their parts, are in such a position. If, indeed, the *primum mobile* is locally moved without the acquisition of any other thing, everything can be explained (through this), just as through the positing of that thing.[6]

Having demonstrated the vulnerability of the hypostatized moment, Ockham extends the range of his dialectical examination to the notion of an hypostatized time: time conceived of as an equably flowing entity streaming from the dim past to the unknown future in absolute divorce from permanent objects.[7]

Since there is no better ground for assuming time to be a distinct substance than there was for the assumption that an absolute moment was a separable substance, time, Ockham indicates, must, in the absolute scheme, be an accident. It must be, further, a divisible accident, since it is posited by the absolute theorists to be *in* a temporal body, just as any other quality imbues its patron, and the divisibility *of* such a patron subject is sufficient guarantee for the divisibility of all of its accidents. Being, therefore, a divisible accident, time must have simultaneously existent parts to account for its extended and divisible character — but Aristotle expressly denied the simultaneity of the parts of time. If, on the other hand, the absolute theorists wish to evade this head-on clash with Aristotelian authority by insisting that time's extended character is owing to successive addition of temporal part to temporal part, rather than to their simultaneous existence, they are still shown, by Ockham, to be at odds with authority, since the temporal subject which time is posited to be *in* is extended by means of simultane-

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possit esse nisi in mobili, et cum non est maior ratio quare sit in una parte mobilis quam in alia, erit in qualibet parte mobilis, et ponitur a nonnullis tota esse in toto corpore et in qualibet parte, vel erunt diversa instantia in diversis partibus, quorum utrumque est impossibile. Non est ergo accidens indivisibile secundum extensionem, nec est accidens divisibile secundum quod sit extensum ad extensionem subiecti, quia tunc esset longum, latum, et profundum, quod videtur absurdum."

[6] *Phil. Nat.*, IV, 1.

[7] *Phil. Nat.*, IV, 2: "Per aliquas rationes priores potest probari quod tempus non est alia res secundum se totam distincta ab omni re permanente." In *Tractatus.*, p. 96, Ockham writes: ". . . tempus non est aliqua res distincta secundum se totam ab omni re permanente et ab omnibus rebus permanentibus." As the sequel will show, Ockham is combatting the theory of time as a *forma fluens*.

ously existent, extended, parts, hence time — a quality investing this subject — *must* be conceded to consist in simultaneously existent parts.[8]

Still pursuing the absolutists' notion that subjects are *in* time owing to the inherence *in them* of some portion of time absolute, Ockham once again shows this theory to be directly opposed to the Philosopher's view. Since time invests the whole of the heavens, it must, conceived as an accident, be in any part. It cannot be held to be a whole in any *one* part of the heavens; hence, one part of time must be in one part of the heavens, and another in another. Time, then, is shown once more to be extended owing to simultaneously existent parts, for its subject, the heavens, consists in simultaneously existent parts.[9]

"Further," Ockham continues, concluding this rejection of time conceived of as an absolute existent:

> quantity, body, surface, line and place are not distinct really from substance and quality; because every body and surface and line and place is a substance or a quality . . . therefore, for the same reason, time is not really distinct from a substance or a quality; but no substance or quality is a thing distinct from permanent things, therefore, etc. Further, it has been shown that motion is not a thing distinct from permanent things; therefore, and for the same reasons, neither is time. And again, everything can be explained without such an absolute thing, as will become obvious as we proceed.[10]

2.

Time According to Ockham

Time, as the measure whereby we determine the duration of motion, of rest, and of those physical objects subject to generation and corruption is, according to Ockham, not only completely knowable, but is, indeed,

[8] *Phil. Nat.*, IV, 2: "Primo: quia cum tempus non possit esse substantia talis oportebit quod sit accidens. Sed non est accidens indivisibile, cum sit in corpore subiective, ergo est divisibile, et per consequens extensum habens partes simul existentes, quod est contra Philosophum qui dicit quod partes temporis non sunt simul. (Cf. Aristotle, *Physics*, IV, 10). Si dicas quod tempus est extensum non secundum partes simul existentes, sed sibi invicem succedentes, hoc non valet, quia subiectum temporis est extensum secundum partes simul existentes, ergo, etc." See also *Sent.*, II, 12, vv; and cf. Aristotle, *Physics*, IV, 10.

[9] *Phil. Nat.*, IV, 2: "Praeterea, tempus est in toto caelo, vel ergo est in qualibet parte caeli, vel in nulla; non in nulla, quia tunc non esset in toto: quod enim, nec secundum se, nec secundum aliquam suam partem est in aliquo, non est in toto, ergo tempus est in qualibet parte caeli; sed non est totum in aliqua parte caeli, quia nullum accidens tale est in caelo, igitur una pars temporis est in una parte caeli, et alia pars in alia, et ita tempus est extensum secundum partes simul existentes, et erunt plura tempora simul, quia quaelibet pars temporis est tempus." See also, *Altaris.*, p. 19.

[10] *Phil. Nat.*, IV, 2. See also: *Logic.*, ch. 44, p. 127, ch. 46, p. 134; *Tractatus.*, p. 96—7; *Sent.*, II, qu. 12, a; *Quodl.*, VII, qu. 7.

actually known more intimately and with greater certitude than the physical events which it measures. That thing, after all, by means of which the unknown is rendered knowable, must itself be better known than that which it orders.[11]

Nor is this intimate knowledge of the true character of time the exclusive property of some few savants; for there is no one so ignorant, Ockham maintains,

> as not to know of something through time — that one of two things either rests longer, or moves longer, or endures longer, or for an equal span, than another.[12]

In practice, however, Ockham notes, there are two modes by which unknown quantities are ordered and rendered known — and, indeed, two distinct varieties of measure. The first mode consists in referring the unknown quantity directly to some determined standard of measure; while the second mode consists in a haphazard estimate of the unknown quantity, which approximation in itself presupposes prior acquaintance with the first mode of measurement. Although this latter mode is in common employ, it is obviously less precise than the former; hence, it is the first, more exact, mode of measurement which is of scientific value.

When the first mode is employed to determine the quantity of any permanent, extended object — any object, that is, which has all of its parts at once — the first of two varieties of measure is being employed: the "measure of permanent things" *(mensura permanentium)*. In this

[11] *Phil. Nat.*, IV, 3: "Ostenso quid non est tempus, dicendum est quid est tempus . . . Sunt autem aliqua praemittenda. Primum est quod tempus est mensura motuum quorum quantitas est nobis ignota, hoc est, per tempus certificamur quamdiu aliquid movetur, et quod unum mobile diutius movetur quam aliud, illud enim dicitur diutius moveri quod in maiori tempore movetur. Aliud est, quod tempus est mensura rerum temporalium: per tempus certificamur quod una res permanens diutius durat quam alia. Aliud est, quod sicut per tempus mensuratur motus, et res temporalis, ita etiam tempus est mensura quietis, quia per tempus certificamur quae res diutius quiescat et quae minus, et quae aequaliter quiescit cum alia. Et ista sunt principalia, vel praecipua propter quae ponitur tempus, et propter quae cognitio temporis est nobis necessaria. (Cf. Aristotle, *Physics*, IV, 12). Ex quibus sequitur quod cum quantitas mensurae debeat esse nobis notior quam quantitatis mensurati, quia propter quantitatem mensurae certificamur de qualitate mensuratorum, quod natura temporis quantum ad suam quantitatem sit notior nobis, quam quantitate motuum mensuratorum; ex quibus sequitur quod tempus non est res latens incognoscibilis, sicut aliqui dicunt, immo est nobis notum . . ." See also, *Sent.*, II, qu. 11, a.

[12] *Phil. Nat.*, IV, 3. Ockham adds: "(dicendum est) autem tempus valde ignotum propter multas difficultates emergentes tractantibus de natura ipsius ex auctoritatibus auctorum male intellectis, propter quod tales philosophantes non intelligentes modos loquendi, et auctoritates philosophorum magis dubitant de tempore, quam alii simplices utentes solum modo secundum usum vocis, sicut plus dubitant de motu qui tamen ad sensum apparet, et per sensum apparet, et per sensum notificatur."

case the standard to which the unknown quantity is referred is some conventionally determined scalar quantity. When, however, the first mode is applied to the measure of successive quantities — quantities which do not have all their parts at once — then the second variety of measure: the "measure of successive things" *(mensura successivorum)*, is being employed. This consists in referring the quantity to be measured to the standard of a constant and uniform motion, rather than a static, predetermined, linear scale.[13] Ockham writes:

> when someone does not know for how long something is moved, he can be rendered certain through some motion known to him; for by considering and applying the motion of the sun (which is) known to him, to that other motion, and noting that that other mobile is moved from such a point to such a point, he knows for how long it was moved.[14]

What Ockham is driving at, then, when he defines time as

> the measure of all things whose duration can be certified by the intellect by means of something else better known to it,[15]

is that time is a certain non-spatial dimension of motion.

It is the ordered, progressive, natural sequence of motion, Ockham contends, which allows us to cognize, and employ as a measure, its temporal dimension. The clearly demarcated character of some one mobile's present physical constitution, or situation, as contrasted with

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[13] *Phil. Nat.*, IV, 3: "Oportet autem scire quod quando quantitas alicuius rei ignotae debet certificari et notari, quandoque notificatur per applicationem quantitas mensurae notae ad rem cuius quantitas ignoratur, semel, vel pluries sicut per applicationem ulnae, cuius quantitas nota est semel, vel pluries ad pannum applicatur, et tunc notificatur de quantitate panuum, quandoque autem aliquis habens magnam experientiam de tali mensuratione potest per solum aspectum rei certificari quanta res est, utrum, scilicet sit tricubita vel bicubita, quamvis talis certificatio non sit ita nota et certa sicut prior. Et isto duplici modo proportionabiliter quando ignoratur de duabus rebus, quae ipsarum est maior vel minor vel an sint aequales quarum non potest una alteri applicari, certificatur quaeque earum sit maior vel minor, scilicet per applicationem eiusdem ad utramque earum, vel solum per aspectum illarum quamvis secunda noticia sit incertior quam prima. Et sicut est duplex talis notificatio in permanentibus, ita in successivis. (Cf. Aristotle, *Physics*, IV, 12) . . . duplex est mensura. Quandoque enim aliquid dicitur mensura alicuius, quando una re notum est quanta ipsa est, scilicet, quando notum est quod ipsa est pedalis, vel bipedalis et de alio ignoratur quanta est, quia nescitur an fit pedalis vel semipedalis, sed cum re priore scitur postea quanta est illa prius ignota, et ista potest vocari mensura permanentium. Alia dicitur esse mensura quando de aliqua re, sive sit notum quanta ipsa sit, sive ignotum, scitur tamen quod movetur uniformiter, scilicet aequaliter per quod de alio, sive sit notum quantum est, sive nesciatur quantum est, potest certificar(i) quamdiu est, vel diu movetur, vel quiescit, et ista potest vocari mensura successivorum. Et secundum hoc cum scitur qualiter res permanens movetur, scitur de alio quamdiu permanet, sive etiam durat, movetur, vel quiescit." See also, *Sent.*, II, qu. 11, b.

[14] *Phil. Nat.*, IV, 3.

[15] *Ibid.*

still another such achieved condition or location, validates the temporal designations "prior," and "posterior." From here it is but a short step to supplying numerical values to the continuous sequential passage from the prior to the posterior stage or situation; and time is precisely this numerical statement of motions' uniform aspect. Ockham, then, expresses himself as being in perfect accord with Aristotle's definition of time as "the number of motion with respect to prior and posterior."[16]

It is not, Ockham continues, that we stand *in* time and number motion by correlating the prior, and posterior, and all intermediates, with this, and this, passing moment — quite the contrary: time is gleaned *from* the physically prior and posterior, and is the numerical expression of this ordered aspect of the moved. Time is not number *by which* we number *(quo numeramus);* but is, rather, the *numbered number (numerus numeratus)*, which is itself a part *of the numbered thing (pars rei numeratae).*[17]

3.

Time and Motion

Ockham's position with respect to the nature of time has, up to this point, assumed the existence in nature of a precise normative motion, whose very uniformity validates the numerically mensurable approach to questions involving temporal duration. He himself, however, concludes that the character of the most obvious frame of reference — the diurnal passage of the sun — is not itself of such nature as to yield absolute certainty in such matters: for the motion of the sun is only granted

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[16] *Phil. Nat.*, IV, 4: "Praedictis concordat ratio Philosophi 4 huius . . . sive diffinitio quae talis est: Tempus est numerus motus secundum prius et posterius. Tunc enim certificamur per tempus de aliis motibus istorum inferiorum quando est ordo inter prius et posterius in motu uniformiter; hoc est, quando consideramus motum quod uniformiter est in tali loco, et posterius in alio, per hoc scimus quamdiu movetur illud quod ignoramus. Unde nisi cognosceremus quod mobile uniformiter prius est in tali loco, et postea in alio, numquam possemus cognoscere, nec per ipsum iudicare quamdiu aliquid movetur, quiescit, vel durat. Ex quo patet quod hoc possumus scire per hoc solum, quod consideramus et numeramus prius et posterius in motu." See also, *Tractatus.*, p. 107; and cf. Aristotle, *Physics*, IV, 11.

[17] *Phil. Nat.*, IV, 4: "Quoniam autem numerus est duplex, et namque quod numeramus, et numerabile numerum dicimus, et quo numeramus; quidem tempus autem est quod numeratur, et non quod tempus est numerus numeratus, quia est pars rei numeratae." Ockham continues: "Frustra ergo ponitur aliud a motu, et prius ostensum est quod motus non est alia res a rebus permanentibus, ergo nec tempus est aliquod accidens inhaerens moto, vel motui." See also, *Tractatus.*, pp. 110—111; and cf. Aristotle, *Physics*, IV, 11.

the status of normative standard owing to the relatively difform character of more mundane motions.[18]

Nevertheless, the motion of the sun, for all practical purposes, *does* provide, if not absolute certainty as a standard of reference, a standard which is sufficiently accurate for our temporal determinations; as, indeed, Ockham points out, it is eminently more reasonable to measure the less uniform, by the more uniform, than to attempt to gauge the more uniform by referring it to the difform.[19]

Ultimately, even the relatively uniform motion of the sun, which provides a pragmatically adequate norm for our earthly temporal mensuration, receives the degree of uniformity which the intellect must accord it, through fundamental reference to the first agency of motion *(primum mobile)* — i. e., the sphere of the fixed stars — whose motion alone is the perfect, uniform, and constant motion which is normative for the entire universe. True time, then, must be affirmed to be a passion *(passio)* of this prime agency of motion.[20]

"Time," Ockham writes,

is a passion of the first motion just as mensurability is a passion of an ell, and risibility of a man. Just as, notwithstanding that a man is truly risible,

[18] *Phil. Nat.*, IV, 6: ". . . tempus est motus sub isto intellectu: quod per hoc, quod aliquid movetur uniformiter, potest aliquis certificari de diuturnitate rei. Non tamen est universaliter verum quod omne per quod sic cognoscitur, scilicet quantum est, est tempus illius motus, cum ista res, scilicet tempus non potest competere cuiuscumque motui. Quia quamvis per motum inferiorem difformem mensuremus motum uniformem; quia quando quis cognoscit horam diei per motum suum et exercitium, et cognoscit in quo situ in caelo est sol, et etiam per motum talem mensuramus alios motus, tamen hoc non potest fieri per certitudinem, nec competit ex natura rei, sed magis propter defectum aliquem, ideo non cuiuslibet motus est tempus, sicut non quilibet pannus est ulna, quamvis per pannum possit certificari de aliquo quod sit ulna."

[19] *Ibid.*: ". . . Aliquis enim sciens quo(d) ulnarum est pannus, per illum pannum, potest certificari de aliquo ligno . . . quod est ulna; et tamen ille pannus non est ulna, quia de natura sua habet magis quod debet mensurari quam mensurare, et ita est de motu uniformi respectu motuum difformium, quia potius debet mensurare difformia, quam mensurari ab eis."

[20] *Phil. Nat.*, IV, 7: "Patet ex iam dictis cui motui compet(i)t esse tempus, scilicet primo motui primi mobilis, uniformiter et velocissime moti, quamvis per motum solis possimus metiri motum multarum rerum, tamen ratio ipsius magis convenit illi motui primo, quia quantum est ex se, magis natus est certificare de aliis motibus, quam motus soli; immo, per illum motum natus est intellectus certificari de motu solis, et aliorum planetarum, ergo tempus est passio primi motus." See also, *Tractatus.*, p. 107; and cf. Aristotle, *Physics*, IV, 14. Philotheus Boehner, (in his article: "Scotus' Teachings According to Ockham," *Franciscan Studies*, n. s. vol. 6 (1946) p. 101 writes: "*Passio* is a technical term (for the scholastics) and indicates that a term is predicated in the second mode of *per se* predication about its subject. The first mode of *per se* predication is given when the predicate defines the subject; for instance 'rational' is predicated in the first mode of *per se* predication about the subject 'man;' the second mode of *per se*

and yet we say that risibility is a passion of man, so we can say that first motion is time, and yet time is a passion of first motion, because such propositions which appear to be repugnant are verified through diverse suppositions of terms. Just as in this: "man is risible," the terms stand in *personal* and *significative* supposition; but in this: "risibility is a passion of man," this term "man" is used in *simple*, or *material* supposition . . . Similarly, here: "first motion is time," the terms are used in *personal* and *significative* supposition, because through this nothing more is denoted except that the prime mobile is uniformly and swiftly moved, through which (motion) the intellect can ascertain of other things how long they endure, move or rest. In this, however: "time is a passion of the first motion," the terms are used in *simple* or *material* (supposition); for it denotes that time is predicated . . . of motion . . . just as measure is predicated of an ell.[21]

"It is obvious," Ockham concludes,

from what has been said, that time is not something other than the prime motion, because through the prime motion . . . we know for how long temporal things endure, move, or rest. And still "time," and "prime motion," differ in definition, since "time" imports a soul which is certified, and other things of which it is certified; and so it does not import other than permanent things, although it may import that some of these permanent things are moved.[22]

The true moment of time — as against the absolutists' conception — is seen by Ockham to be a translation into temporal terms of the spatial changes suffered by the sphere of the fixed stars. As such, the temporal moment does not differ substantially from the prime motion; but each moment is, rather, a predication of the prime mobile, providing the mode through which its spatial changes, with respect to its parts, are known and expressed.[23]

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predication is given, when the subject enters the definition of the predicate, as for instance 'risible,' for its definition would be: man who is able to laugh." Ockham (*Phil. Nat.* IV, 11), writes: "tempus non sequitur motum sicut res inhaerens sibi, sed dicitur sequi motum quia praedicatur per se secundo modo de primo motu." See also, *Tractatus.*, p. 119; *Logic.*, ch. 37, pp. 96—8.

[21] *Phil. Nat.*, IV, 7. See also, *Sent.*, II, 12, c, ss.

[22] *Phil. Nat.*, IV, 7. See also, *Sent.*, II, 12, c, ss. In *Tractatus.*, p. 111, Ockham is much more direct: ". . . dico quod tempus primo et principaliter significat illud quod significat motus, quamvis *consignificet tam animam quam actum animae*, quo cognoscit prius et posterius illius motus secundum modum praeexpositum. Et ideo supponendo dicta de motu, et quod propositiones intelligantur, in quibus ponitur hoc nomen motus modo, quo dictum est, potest dici, quod tempus significat motum in recto et animam seu actum animae in obliquo; et propter hoc significat prius et posterius in motu in recto. Ex quo sequitur, quod tempus non erit numerus quo numeramus, sed erit numerus numeratus, quia erit prius et posterius in motu praenumerata ab anima."

[23] *Phil. Nat.*, IV, 8: "Viso quid est tempus, videndum est quid est instans. Circa quod dico, quod instans non est res statim desinens esse in rerum natura, sed instans non est aliud ab ipso primo mobili. Unde sicut mutatum esse, sive mutatio, non est aliqua res statim desinens esse, sicut prius dictum est, sed importat mobile alicubi existens, ubi prius non erat immediate ante, ita instans non est nisi primum mobile existens alicubi

4.

Objections

To hold, as Ockham does, that time *is* motion, even after his carefully stated qualifications, is to raise a host of dissenting voices. The first objection to his view wields the potent weapon of Aristotelian authority; for Aristotle, this dissenting opinion points out, holding any part of time to *be* time, proved that time could not be circular motion, as it is not the case that any part of circular motion is, *itself*, circulation.[24]

Next, a speculative extrapolation of Ockham's equation of motion and time purports to demonstrate the inconsistency of his position. If there were many heavens, this argument runs, then there must be admitted to be many prime mobiles; hence, in terms of Ockham's equivalence, there is implied an "inconvenience" — i. e., the possibility of a plurality of "times."[25]

Again, motion and mutation were shown by Ockham not to be other than individual moved and mutated subjects; hence, his own theory of motion seems to run counter to his equation of time and motion; for time, which he claims to be of a generalized and uniform character obtaining equally among *all* moved substances, can not itself be identified with any *one* motion or mutation.[26]

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secundum suas partes, ubi non erat ante immediate, ut hoc nomen 'instans' non dicat nisi primum mobile existens in tali loco, ubi prius non erat immediate ante, nec immediate post erit; ut sicut cum dicimus: 'homo est,' in tali locutione, vel: 'hoc nunc est album,' non importatur plus nisi quod hoc est album quando primum mobile est alicubi, ubi prius non erat, nec postea erit . . . Et ita res importata per hoc nomen 'instans' est eadem semper non variata in sua substantia, et tamen illa res variatur secundum locum, hoc est, successive est in diversis locis propter quod secundum prius et posterius successive de eodem, vel diversis, dicitur nunc esse . . . non est ibi aliqua res quae vere sit corrupta desinens esse, sed ibi est primum mobile, quod existens alicubi secundum partes desinit esse ibi, et est alibi, eo quod movetur continue." See also, *Tractatus.*, p. 102, 121.

[24] *Phil. Nat.*, IV, 9: "Ad maiorem evidentiam praedictorum ponendae sunt aliquae obiectiones. Primo enim videtur quod tempus non sit motus, et hoc propter rationes Philosophi, per quas probat quod tempus non est motus circularis, sive circulatio; quia quaelibet pars temporis est tempus, sed non quaelibet pars circulationis est circulatio, ergo tempus, et circulatio prima, non sunt idem; et per consequens circulatio non est tempus, nec e converso." Since time is not to be identified with circular motion, it is to be presumed that it cannot be identified with any of the "less perfect" varieties of motion — i. e., rectilinear, or mixed. See *Tractatus.*, p. 114; and cf. Aristotle, *Physics*, IV, 10.

[25] *Phil. Nat.*, IV, 9: "Item, si motus esset tempus, ergo si essent plures caeli primi, essent plures motus primi, ergo essent plura tempora, quod est inconveniens." See also, *Tractatus.*, p. 114.

[26] *Phil. Nat.*, IV, 9: "Item, motus et mutatio tantum sunt in ipso mutato vel moto, sed tempus est simul ubique et apud omnes, ergo tempus non est motus nec mutatio." See also, *Tractatus.*, p. 114.

Finally, motions may be fast or slow, but time is the equable, uniform measure which lends verity *to* these designations: "fast," and "slow," and is not, in *itself*, "fast," or "slow." Time, on this account, obviously cannot be motion.[27]

Similarly, Ockham's claim for the substantial unity of the temporal moment and the prime mobile comes in for its share of criticism. If an instant were, in actuality, one and the same with the substance of the prime mobile, Ockham's opponents argue, how can one account for the fact of time's *successive* character? For the fact that one moment follows on another? And to deny that time *is* continuous in nature, is to fly in the face of Aristotle's express views on this subject.[28]

Again, mutation, it is argued, occurs instantaneously; but Ockham has not claimed the substantial unity of *mutation* and the prime mobile; how then can he maintain the substantial unity of an *instant* and the prime mobile? The measure of motion is a unit of time, and *not* the substance of the prime mobile.[29]

Further, since time, as any continuum, is divisible, and must consist in more than one terminus; and since an instant is, in fact, the terminus of time, time must consist in many instants — but there cannot be many *substances* of the prime mobile; hence, it follows that any instant, and the substance of the prime mobile, are distinct things.[30]

Finally, Ockham's adversaries point out, the "now" — the moment of time — links the past and the future; and no one could seriously maintain that this "link" corresponded in any way to any mobile.[31]

5.

Resolutions

Ockham pauses just long enough before attempting to reply to the objections which his opponents have proferred, to restate what he holds to be the real ground upon which their own theory of time is based; the

[27] *Phil. Nat.*, IV, 9: "Item, motus est velox vel tardus, sed tempus nec velox nec tardus, ergo etc., minor patet quia velox et tardum certificantur tempore et etiam diffiniuntur." See also *Tractatus.*, p. 114.

[28] *Phil. Nat.*, IV, 9: "Item, quod instans non sit ipsa substantia mobilis videtur, quia si esset substantia mobilis, nullo modo esset aliud et aliud instans, quod est contra Philosophum." Cf. Aristotle, *Physics*, VI, 2.

[29] *Phil. Nat.*, IV, 9: "Item, mutatio est in instanti; sed mutatio non est in substantia primi mobilis; ergo, etc. Item, mutatio mensuratur in instanti, et non mensuratur substantia primi mobilis."

[30] *Phil. Nat.*, IV, 9: "Item . . . nullius divisibilis est tantum unus terminus; sed instans est terminus temporis, et tempus est divisibile; ergo sunt illic plura instantia, sed non sunt plures substantiae primi mobilis; ergo etc." Cf. Aristotle, *Physics*, VI, 2.

[31] *Ibid.*: "Item, nunc terminus temporis, et continuat praeteritum cum futuro, sed ista non competunt mobili." See also *Sent.*, II, 12, a.

implicit faith that all distinct names, as "time," have finite signification; and that for all such distinct names there obtains in nature a non-connotative, non-relational, absolute entity.[32] Once again, he suggests for the enlightenment of those deluded by this correspondent view, that proper "resolution" of such terms would be beneficial.[33]

Ockham feels, with regard to the first objection levelled against his equating of time with motion, that his adversaries are abusing Aristotle's authority when they seek to direct it against him, insofar as they seem to have completely missed the point that Aristotle was striving to make. Aristotle, Ockham insists, was everywhere motivated by the desire to make clear that the only difference obtaining between "prime motion," or "prime circulation," and "time," was difference in definition (and not "difference" in any *material* sense); and these differ in definition owing to the circumstance that through the term "time," there is connoted something which is not signified through the term "motion," and conversely.[34]

That which the terms "prime motion," or "prime circulation" import, and which, consequently, defines these terms, is the undifferentiated process of the prime motion — prime motion conceived in its totality. "Time," however, the very conception of which, as we have seen, arises from the necessity for marking the endurance, motions, and rests of particular mobiles, is an aspect of this prime motion which, consequently, connotes much more: it consignifies first

[32] *Phil. Nat.*, IV, 10: "Ad solutionem praedictarum rationum notandum est quod sicut de motu oriuntur multae difficultates, propter modum loquendi, quia scilicet propter varietatem eloquii frequenter utuntur homines hoc nomine 'motus' et diutius hoc verbo 'movetur,' ita est de tempore, quod propter hoc quod utuntur hoc nomine, 'tempus' credunt multi quod una res aliqua absolute, sine connotatione et relatione importetur hoc nomine 'tempus' . . ."

[33] *Tractatus.*, p. 100: ". . . tales propositiones: 'motus est,' 'tempus est,' et huiusmodi non sunt eodem modo recipiendae sicut istae: 'homo est,' 'animal est,' . . . et huiusmodi, sed debent resolvi in alias, ut idem sit dicere: 'motus est,' et 'aliquid movetur.' Similiter, idem est dicere: 'tempus est,' et 'aliquid movetur,' unde potest anima cognoscere, quantum aliquid movetur. Et revera simplices, qui imaginantur, quod sicut nomina distinguuntur, ita semper correspondent distinctae res, melius esset eis uti tali modo loquendo quam alio." See also, *Altaris.*, p. 53—58.

[34] *Phil. Nat.*, IV, 11: ". . . dico quod Philosophus non intendit improbare istam conclusionem; motus primus non est tempus, nec per consequens, istam: motus non est tempus, nec econverso; sed intendit probare istam conclusionem: motus primus sive circulatio non sunt cum tempore idem diffinitione. Similiter, istam: motus et tempus non sunt idem diffinitione, hoc est, non habent eandem diffinitionem. Et ista fuit opinio Aristotelis . . . tempus et circulatio non sunt idem diffinitione, hoc est, non habent eandem diffinitionem, vel quod aliquod importatur per 'tempus' quod non importatur per 'motum' vel eodem modo per 'circulationem,' vel econverso." See also, *Tractatus.*, p. 115.

of all, the actuality of that prime motion of which it is a dimension; secondly, it connotes the divisibility of this prime motion into numerable parts; third, it consignifies the existence of the mentality which marks and numbers these divisible parts; and, finally, the name "time" imports the real existence of an object, or objects, whose perseverance, motion, or period of quiet, is being submitted by some mind, to measure.[35] This, Ockham believes, as against the absolutists, is what Aristotle really meant.

Ockham concludes this treatment of the first objection in this manner:

from the foregoing, it follows that time is something belonging to motion — i. e., it is (both) something predicable of motion, and importing motion, just as "risible" is something belonging to man, since it is a proper passion of man. And therefore, these obtain simultaneously: "man is risible," and: "risibility is something belonging to man," just as these hold simultaneously: "time is motion," and: "time is something belonging to motion," because it is a passion of prime motion.[36]

With regard to the second objection, Ockham is perfectly willing to concede that his equation of time and the prime mobile *does* lead — granting the possibility of numerous heavens and prime mobiles — to the conclusion that there would be a plurality of "times." He does not, however, see that this argument in any way involves a rejection of his position. Even, he points out, were this fictional condition — a plurality of heavens — to exist, the various resultant "times" would be, for all practical purposes, equivalent to but one verifiable, knowable, functional measure of motion, rest, and endurance. Ockham writes:

if there were two (other heavens) equal to a first, and many prime motions, truly there would be many times; still, *these would be equivalent to but one*. That is, these two (other) times do nothing more with regard to measuring, than does one only, and this one only would be apprehensible by all. Just as if someone, wishing to measure something, would accept many ells (as standard), then there would be many ells truly although all of them would be *one through equivalence* — that is, one (ell) would do as much as two with

[35] *Phil. Nat.*, IV, 11: ". . . intendit Philosophus probare quod aliquid importatur per 'motum' quod non importatur per 'tempus', et econverso, et hoc utrumque verum est, quia per 'primum motum' importatur, sive per 'circulationem' praecise totus motus et non pars; per 'tempus' autem, importatur tam pars motus, sive circulationis, quam totum simul; cum hoc per 'tempus' importatur anima, et motus, et alia de quibus anima debet certificari per tempus . . . Et patet evidenter, quod per istam (Aristotle) . . . non intendit probare nisi quod isti termini non sunt idem diffinitione, et aliquid importetur per unum, quod non importatur per reliquum, vel saltem eodem modo." See also, *Tractatus.*, p. 118—9.

[36] *Phil. Nat.*, IV, 11. In *Tractatus.*, p. 103, Ockham writes: ". . . hoc nomen 'tempus' aliquid significat vel consignificat, quod non significatur vel consignificatur per hoc nomen 'motus' quod quidem consignificatum per 'tempus' est anima mensurans."

respect to the measured. Another example could be given using location — since by positing that water and air simultaneously are the place of some body, and this air and water are not situated differently in terms of situation and location, that body would be truly in two places, since there is no better ground why it should be in the air than in the water, or conversely. And so it would be in each of them, or in neither; and yet it would be said *to be in one place*. Because, in order that that body be in a place, it is no more required that it be in water *and* air, than that it be in only one. Hence, if through an impossibility there were a plurality of prime motions, then there would be a plurality of times . . . still (these times) would be equivalent to one in the way that has just be explained.[37]

The validity of the third objection too, as the first, according to Ockham hinges on an interpretation of Aristotle. Whatever force this third argument has is derived from the notion that Aristotle meant by the ubiquity of time, its actual presence among objects, in a material sense. Ockham then, in order to knock the supports out from this argument, affirms that this absolutist interpretation of Aristotle's statement: "time is everywhere, among all things," is not at all in keeping with the Philosopher's intent.[38] What Aristotle really meant, Ockham writes, is that

[37] *Phil. Nat.*, IV, 11. It is in an entirely different spirit that St. Thomas Aquinas differentiates two kinds of time: one quantitatively discontinuous, which measures the motions of spiritual creatures, and one continuous, which holds for all corporeal creatures. See Aquinas, *Quaestiones Quodlibetales*, Quodlibetum secundum, qu. 3, art. 1. See also his *Commentum in Librum I Sententiarum*, dist. 37, qu. 4, art. 3, where he writes: ". . . dicendum, quod non potest accipi aliqua proportio temporis in quo movetur corpus, ad tempus in quo movetur angelus, quia tempus quo movetur angelus, non est divisibile divisione continui, sed discreti in plura instantia finita; in tempore autem quo movetur corpus, sunt infinita instantia in potentia; et ita nulla est proportio." Taking into cognizance his stand (with Avempace) in the controversy centering around the Aristotelian Text 71 (see above, pp. 266—274), Aquinas adds: ". . . dicendum quod tempus istud quo angelus movetur, divisibile est in duo, quae non copulantur ad unum communem terminum, cum hoc tempus non sit continuum. Unde non sequitur quod in medio instanti sit in medio spatii: quia non est necessarium accipere medium instans." The second objection to Ockham's theory is answered differently in the *Tractatus.*; on pp. 117—8, Ockham replies in this fashion: "per talem modum arguendi (non) convenit inferre pluralitatem ex pluralitate, quando unum praedicatur de alio utroque sumpto significative, sicut non sequitur: intelligentia prima est ens, igitur se sint plura entia, sunt plures intelligentiae primae, et sic de multis aliis. Sed quando accipitur illa esse eadem vel habere eandem definitionem, contingit tunc semper inferre pluralitatem ex pluralitate. Et ideo quamvis non sequatur formaliter: motus caeli est tempus, igitur si sint plures caeli, sunt plura tempora; tamen ista consequentia est bona et formalis: motus caeli et tempus habent eandem definitionem vel sunt nomina synonyma, igitur si sint plures caeli, sunt plura tempora. Ex quo patet, quod Philosophus non intendit improbare istam propositionem: motus est tempus, sed istam: motus et tempus sunt idem vel habent eandem definitionem." Cf. Aristotle, *Physics*, IV, 10.

[38] *Phil. Nat.*, IV, 11: "Ad tertium dico, quod quando Philosophus dicit quod tempus est simul ubique, etc., non intendit quod realiter sit apud

time is that through which whatever things are mensurable, with regard to their motions and rests, can be measured; so that time can be said to be on land and on sea, since everything which is on land and sea can be measured by time.[39]

This (true) interpretation, Ockham continues, follows quite naturally from the position with respect to time and motion which both he and Aristotle have been maintaining all along.

It follows that not all motion is time, because not all motions are those through which all things, on land or sea, can be measured. But the prime mobile's motion *is* that through which all things on sea and land can be measured.[40]

Ockham neatly turns the tables on his opponents with respect to their final objection, demonstrating it to actually ***imply his*** position rather than discredit it. To observe — correctly — that time is constant, while motions can be more or less swift, entails only the obvious conclusion, according to Ockham, that not *all* motions are time, and that the terms "time," and "motion," are not convertible — i. e., they differ in definition.[41]

Owing directly to the premisses that the events which are measured by time are of various duration, while the measure is itself uniform in nature, one cannot conclude that the measure itself is not a motion;[42] for time, as Ockham has demonstrated, *is* a motion — but a motion of such rigorously constant velocity as to be normative for the entire universe.

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omnia, illo modo quo motus localis illius corporis est realiter ubi est corpus, sed intendit per istam propositionem: 'tempus est ubique apud omnia,' dicere istam: 'tempus est id, per quod omnia' . . ." etc.

[39] *Ibid.* Cf. Aristotle, *Physics*, IV, 10; IV, 12.

[40] *Ibid.* Here Ockham anticipates an equivocation: "Sed numquid debeat concedi quod motus primus est in terra et in mari, sicut conceditur quod tempus est in terra et in mari, cum motus primus sit tempus;" which he answers thus: "Dico quod ista, et similes, sunt quaestiones sophistarum, qui ignorant modos loquendi improprios quibus auctores frequenter utuntur. Unde, non est modus loquendi quod 'motus primus sit in terra et in mari;' sed quod 'tempus est in mari et terra," et ideo unum conceditur et non reliquum, Et ideo in isto sophismate, 'tempus est in terra, motus primus est tempus, ergo motus primus est in terra,' est fallacia amphibologiae, quia maior improprie accipitur."

[41] *Phil. Nat.*, IV, 11: "Ad quartum dico quod illud probat quod non omnis motus est tempus, et quod motus et tempus habe(n)t diversas diffinitiones. Ex hoc enim, quod unus motus velocior alio, et unum tempus non est velocius alio, sequitur quod motus et tempus non sunt adaequate et convertibiliter idem, et quod non omnis motus est tempus — et hoc concedo." See also *Tractatus.*, pp. 116—7.

[42] *Phil. Nat.*, IV, 11: "Unde, sicut non sequitur, unum lignum est longius alio, sed ulna non est lignum, ergo ulna non est lignum (sic!) ita nec alia consequentia (i. e., the one which his opponents drew from the premisses: "motions are fast and slow; time is not fast or slow, etc.") valet." Cf. Aristotle, *Physics*, IV, 10; IV, 12.

Strictly speaking, Ockham points out, it can not be properly maintained that time is "fast," or "slow;" nevertheless, it would not be incorrect, by virtue of a less rigorous mode of speech, to affirm that time *is* "fast," since it is an aspect of the swiftest motion in the universe; accordingly, in no mode ought it to be conceded that time is "slow," nor that — since it is, in addition, an aspect of the most ***uniform*** motion in the universe — *any* one "time," varies in duration from another "time."[43]

When it is held that "swift," and "slow," are defined by time, it must be remembered, Ockham insists, that the term "time" connotes the prime motion. That motion, accordingly, is more swift in which the mobile moves from one point to another while the prime mobile enjoys a greater amount of activity, than is that motion in which the moved travels from one place to another while the prime mobile moves correspondingly less than in the first instance. While should one object that the motion of *any* mobile may provide a frame of reference by means of which the motion, rest or endurance of mobiles may be measured, Ockham would agree: but he points out that the degree of precision suffers accordingly as these physical events are referred for measure to any standard less constant than the uniformly swift motion of the prime mobile.[44]

Ockham turns now to a critical evaluation of the objections launched against his stand that the moment of time is, itself, substantially one with the prime mobile. Temporal instants do, in fact, follow continuously one on the other, Ockham replies to the first objection, but this is not to be understood in the sense that each instant is an atomic

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[43] *Phil. Nat.*, IV, 11: "Probat Philosophus quod non omnis motus est tempus, et quod differunt diffinitione, et ideo de rigore modi loquendi numquam potest concedi quod tempus est velox vel tardum. Dico igitur, quod de virtute sermonis, secundum principia Philosophi, potest concedi quod tempus est velox, quia tempus est velocissimus motus, sed non debet concedi quod tempus est tardum, nec quod unum tempus sit velocius alio, sicut nec motus primus sit velocior primo motu." See also, *Tractatus.*, p. 116.

[44] *Phil. Nat.*, IV, 11: "Et quando dicitur quod velox et tardum diffiniuntur tempore, dico quod verum est quod diffinitur motu primo; illud enim est velocius quod dum movetur a tali puncto at tale(m) punctum, mobile primum plus movetur; et illud tardius, quod dum movetur, mobile primum minus movetur. Et si dicas quod tempus potest haberi de motu a(li)quo, an sit velocior alio per alium inferiorem dico quod verum est; sed non ita certitudinaliter, nec a tot, nec ita bene et faciliter a communitate, maxime si motus sit primus. Unde, ille motus erit tempus, et alius non, qui motus magis certificat quamcumque rem, et totam communitatem certificare habet de aliis, quantum durant, moventur, vel quiescunt, et omne(s) istae conditiones competunt primo motui." Cf. Aristotle, *Physics*, IV, 12.

component which inexplicably arises, is somehow destroyed, and is once again replaced in the absolute timestream; but is rather to be understood as connoting the successive changes in position (with respect to its parts), of the prime mobile. The parts of the prime mobile, that is, successively acquire place after place, each instant of time consignifying by its "now" that the prime mobile is "here."[45] The constant velocity of the prime mobile is guarantee for the perfect successive order, and constant value, of each moment of time.

That Ockham will concede, quite cheerfully, the truth of the proposition: "mutation is instantaneous," is, on the basis of his previous handling of mutation, easily anticipated. It will be recalled that for Ockham, endorsement of the truth of the statement under consideration involves affirmation of the fact that there is no delimitable priority or posteriority of stages exhibited by a mobile undergoing a sudden change; but rather that the mutant receives its form non-successively — i. e., "in an instant."[46] Consequently, to employ the premise: "mutation is instantaneous," in an argument designed to conclude that there is an absolute divorce between mutation and the prime mobile, is to present an argument displaying the logical fallacy of equivocation.[47]

The second objection too, according to Ockham, is tainted by the amphibological fallacy. This time it is the equivocal character of the proposition: "mutation is measured in an instant," which renders suspect the validity of any argument in which it appears as a premise. In addition, Ockham indicates that this argument, which his opponents have designed to attack him, is a veritable boomerang; for by granting the truth of the

[45] *Phil. Nat.*, IV, 12: "Postquam solutae sunt rationes quibus probatur quod tempus est alia res a motu, nun(c) solvendae sunt rationes quibus probatur quod instans est alia res a primo mobili. Unde, ad primum dico quod instans non est aliud et aliud sic, quod sunt diversa instantia quae sint diversae res totaliter; sed sub isto intellectu potest concedi quod instans est aliud et aliud; hoc est, quod primum mobile est successive in diversis locis, et alibi et alibi, ita quod primum mobile secundum diversas partes suas nunc est hic, et nunc alibi." See also, *Tractatus.*, p. 121; *Sent.*, II, 12, gg, mm.

[46] *Phil. Nat.*, IV, 12: "Ad aliud dico quod ista propositio: 'mutatio est in instanti,' conceditur sub isto sensu: quando aliquid subito movetur, tunc quicquid acquirit, subito acquirit; ita quod non est aliquid prius et aliquid posterius acquisitum; ita quod ista propositio: 'mutatio est in instanti,' intelligitur per illam aliam longam." See also, above, Chapter 1.

[47] *Ibid.*: ". . . ideo modus arguendi ex talibus: 'mutatio est in instanti,' et universaliter ex his quae sunt improprie causa(n)t fallaciam aequivocationis, vel amphibologiae, et iudicandum est de eis, et de argumentis in quibus ponuntur per illas quae per eas intelliguntur. Et ideo sicut non sequitur: quando aliquid mutatur, totum simul acquiritur dum primum mobile est in aliquo determinato situ, sed mutatio non est in substantia primi mobilis, ergo instans est alia res — quia semper est licitum propositionem quae per aliam intelligitur poni loco ipsius."

absolutists' claim concerning the absolute nature of mutation and an instant, the proposition: "mutation is measured in an instant," is, understood in their own terms, self-negating and vacuous. That is, on the one hand the absolute theorists have postulated the indivisibility of both an instant, and mutation; and on the other, they cling tenaciously to the idea that "mutation is measured in an instant;" it but remains for Ockham, in order to put his opponents entirely to rout, to point out that there *is no conceivable way in which one indivisible could measure another.*[48]

Ockham removes the barb from the last two objections directed against his conception of the temporal moment, by properly "resolving" the statement: "an instant is the terminus of time," into the complex of which it is actually significative. This resolution leads, subsequently, to a precise notion of how it is that the instant can be thought of as the "link" between the past and the future.

> I say that this proposition: "the instant is the terminus of time," is true in this sense: that when a mobile is moved, it is in that determinate place in which it was not immediately before, nor will be immediately thereafter, and time continues. And this is not other than (to say) that the prime mobile is continuously moved, and so always that it is in a determinate place in which it was not before, nor (in which it) will be immediately thereafter. Nor is it other for time to be continuous than (that) the prime mobile is continuously moved. Similarly, when it is said that some part of time is past and some (part) is future, it ought not be conceded that some *thing*, which is a *part* of time, *was* before, and that . . . this thing *is* not (now), and that some thing *will be* which is not; but this: "a part of time is past, and a part of time is future," is posited in place of this: "the prime mobile was moved immediately before, and will be afterwards moved, or will be in a place in which it is not (now)." Just as time is called "continuous" — i. e., the prime mobile is continuously moved — so it is said that "the instant is the end of the past, and the beginning of the future,"

[48] *Phil. Nat.*, IV, 12: "Ad aliud, quando dicitur: 'mutatio subita mensuratur instanti,' dico quod ista est falsa etiam secundum alios qui ponunt instans esse aliam rem a substantia mobilis, et mutationem esse aliam rem a motu et mobili et omni re permanente. Nam secundum eos tam mutatio quam instans, est res indivisibilis; sed numquam indivisibile quantum ad suum esse mensuratur alio indivisibili. Sicut si esset aliqua magnitudo indivisibilis, numquam mensuraretur alio indivisibili, quia non posset mensurari quia intellectus tantum dubitat quantum est unum quantum aliud et non potest per unum indivisibile de aliquo certificari quantum est . . . Et eodem modo numqua(m) potest intellectus certificari de aliquo quantum est per aliud, nisi quando unu(m) est maius alio, vel quando unum est divisibile et ignoratur utrum sit aequale, vel inaequale alteri indivisibili. Dico, igitur, quod ista non est vera de virtute sermonis: 'mutatio subita mensuratu(r) instanti;' si, tamen, per eam intelligatur ista: 'quando aliquid mutatur subito, acquirit totum simul et non secundum prius et posterius,' bene potest concedi." See also, *Sent.*, II, 12, ii.

because the prime mobile is , , , in one place, and was immediately before in another (place), and will be immediately thereafter in another, so that it is then proper to say: "this was previously moved and will be moved thereafter," and in this mode this proposition: "(the instant) is the link of time," and similarly other such propositions, are to be explained.[49]

6.

Concerning the Subjectivity of Time

Owing to the circumstance that confusion exists among the "philosophers" concerning the question of whether or not time is a purely subjective construct, Ockham feels constrained to conclude his exposition of time with an explicit and final statement of the true relationship obtaining between time and the intellect.[50]

The key to this relationship, and the answer to the question concerning time's status, is to be found, according to Ockham, in a certain power possessed by the intellect — the propensity which it has for singling out and completing certain aspects of extra-mental existents, thus bringing to an express and completed state a phase which is very real, though lacking in articulated being prior to its intellectual "com-

[49] *Phil. Nat.*, IV, 12. In *Tractatus.*, pp. 100—101, Ockham writes: "Unde quando dicitur . . . 'tempus componitur ex illis, quae non sunt, scilicet ex praeterito et futuro,' dicendum quod ista propositio distinguenda est penes amphibologiam. Unus sensus est quod tempus sit aliquid unum distinctum ab omnibus aliis vere compositum tamquam ex partibus ex praeterito et futu(r)o; et iste sensus est falsus, quia tempus non est aliquid tale. Alius sensus est iste, quod tempus significat aliquid esse praeteritum et aliquid esse futurum, et ideo in definitione exprimente quid nominis ipsius temporis debet poni tam praeteritum quam futurum; et pro tanto praeteritum et futurum dicuntur partes temporis. Nec aliud intelligunt Philosophus et Commentator, quando dicunt, quod tempus componitur ex praeterito et futuro et quod praeteritum et futurum sunt partes temporis, nisi quod praeteritum et futurum ponuntur in definitione exprimente quid nominis temporis." Cf. Aristotle, *Physics*, IV, 11; IV, 13; VI, 3. Ockham devotes *Phil. Nat.*, IV, 13, 14, 15 (Cf. Aquinas, above, p. 322, n. 37) to proofs that time is limited to measure of empirically verifiable events — i. e., the limited motions, rests and periods of perseverance suffered by objective existents. In Chapter 13, he writes: "Nullum necessarium et perpetuum mensuratur tempore, quia de nullo tali potest sciri per tempus quantum tale aliquid durat. Unde si esset aliquod corpus infinitum illud non posset mensurari nec per finitum, nec per infinitum, sed eo ipso quod apprehenderetur et cognosceretur esset finitum, ita si aliquid in perpetuum duret, non potest sciri per aliquid aliud quantum durat, et ita tale non poterit mensurari." In Chapter 14, he writes: "Omnia praeter perpetua me(n)surantur tempore, ideo vocantur 'temporalia.' Unde, generabilia et corruptibilia tempore mensurantur, quia per tempus durant." In Chapter 15: ". . . Nulla res inferior potest esse mensura Dei, et ita Deus nullo modo mensuratur sed est immensus — hoc est, non mensuratur." See also *Sent.*, II, qu. 12, gg, mm and qu. 13; and cf. Aristotle, *Physics*, IV, 12.

[50] *Phil. Nat.*, IV, 16: "Quia philosophi faciunt difficultatem circa tempus, an sit in anima, vel possit esse sine anima, ideo quomodo tempus se habeat ad animam est sciendum." Cf. Aristotle. *Physics*, IV, 14.

pletion."[51] It is thus, by the intellectual completion of an aspect of real, extended bodies, that linear units of measure are brought to actual being.

> Just as a branch which is truly an ell (in length), could not be an ell were there no soul. Because if the soul were not, nothing could be measured by using the branch — but an ell is that through which something can be measured — hence, if the soul were not, the branch could not be an ell, and yet that branch is in reality an ell, and an ell is *outside* the soul. It is no more *in* the soul than a stone; still, the soul is posited in the definition of this name, "ell," and not (in this name) "stone." And in this regard it can be said that an ell is other than the soul, and that its being is *completed by* the soul.[52]

The same relationship, then, obtains between time and the prime motion — i. e., the intellect mediates, and brings to completed being that uniform and sequential aspect of prime motion which is time.

Now there are two ways, Ockham maintains in an attempt to reconcile the differences of opinion concerning the true status of time, in which the intellect can be thought of as being involved in the definition of time. The first way consists in defining time as being "that through which the soul is rendered certain." Conceived in this way, time would be related to the prime motion only on those occasions when the intellect, directing itself to the standard of the prime motion, sought confirmation involving problems of individual rest, motion, or endurance. Time, that is, thus conceived, would depend absolutely upon the inquiring intellect.

In the second way, the role of the intellect is immensely changed. Time, in this conception, is held to be that which the soul *uses* to measure

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[51] *Phil. Nat.*, IV, 16: "... patet quod si anima non posset esse, tempus non posset esse tempus, cum nihil posset esse numerus vel mensura. Unde motus primus, quamvis posset esse uniformissimus et velocissimus, si tamen anima non posset esse, tunc ille motus non posset esse tempus. Ideo Philosophus dicit quod tempus est ens in anima, et quod suum esse completum est ab anima, nihil aliud intelligens, nisi quod motus extra non posset esse tempus sine anima." See also *Sent.*, II, 12, ddd. In *Tractatus.*, p. 97, Ockham writes: "... dicit Commentator ... (see Averroes, *op. cit.*, Comment 88, f. 142r), quod 'talia nondum habent esse completum, sed esse eorum componitur ex actione animae et ex eo, quod est in eis extra animam; et entia completa sunt illa in quorum esse nihil facit anima, ut postea declarabitur de tempore.' Quod est sic intelligendum, quod talia, cuiusmodi sunt motus et mutatio et huiusmodi, quae important successionem, nondum habent esse completum, hoc est, non sunt entia completa secundum se tota distincta a rebus permanentibus, nec sunt quaedam completa secundum se tota ... composita realiter ex rebus permanentibus; sed esse eorum componitur ex actionibus animae in eo, quod est non-ens extra animam, hoc est, aliqua importat per talia non habent esse extra animam, quamvis possint cognosci ab anima et aliquid importatum ab eis est extra animam."

[52] *Phil. Nat.*, IV, 16.

the duration of other things. Seen in this light, time is, as an aspect of the prime motion, always "there" for use *by* the intellect; and it exists, so long as the prime motion exists, whether the soul is actually employing it to measure other motions, rests, periods of longevity, or not. The intellect, thus, does not call time *into* being, but *completes* its being by applying the mensurable propensity of *real* prime motion to concrete physical situations requiring measurement. It is to this latter mode of relating time, the intellect, and prime motion, that Ockham subscribes.[53]

Ockham concludes:

> . . . it is patent that that which is time is really *outside* the soul, and yet it *depends* on the soul that it *is* time. Because time could not be time — or that which is time could not be time — without the soul, just as a cause in no way depends on its effect, and yet the cause could not *be* a cause *without* its effect.[54]

CHAPTER FIVE

CONCERNING PLACE

I.

Arguments Against Hypostatization of Place

That there is such a thing as "place" is no more open to serious doubt, Ockham feels, than it is to demonstration *a-priori*. "Places" are universally acknowledged to be the immediate physical scene in which are played the several dramas involving bodies moved in time.

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[53] *Phil. Nat.*, IV, 16: "Oportet autem scire, quod dupliciter potest intelligi quod anima ponatur in diffinitione temporis. Uno modo, ut denotetur tempus esse illud per quod anima actualiter certificatur, ut ista sit descriptio temporis: tempus est illud per quod anima certificatur. Alio modo, ut denotetur quod tempus est illud quo anima potest mensurare alia, quamvis, de facto, non mensuret, vel sive men(s)uret actualiter, sive non. Et tunc talis potest esse descriptio temporis: tempus est illud per quod anima pot(est) certificari de aliis. Si primo modo intelligatur descriptio temporis, dico quod primus motus non est tempus, nisi quando anima per ipsum mensurat alia, et tunc sub isto intellectu oportet concede(re), quod si anima non numeraret motum primum secundum prius et posterius mensurando alia per ipsum, non esset tempus. Si autem secundo modo intelligatur, tunc debet dici quod motus primus est tempus, sive anima mensuret vel numeret primum motum, sive non; et ita tempus est, sive anima mensuret, sive non." See also, *Sent.*, II, 12, xx; and cf. S. C. Tornay, *Ockham, Studies and Selections* (Open Court Pub. co., La Salle, Ill. (1938). On p. 45, Prof. Tornay writes: "the distinctive feature of Ockham's conception (of time) lies in his subjectivist approach." As we have seen, however, Professor Tornay must be in error. "Time," for Ockham, is a connotative term signifying directly the motion of an *absolute existent* — i. e., the prime mobile — and consignifying the soul which imparts number to this motion.

[54] *Ibid.* See also *Tractatus.*, p. 99; *Sent.*, II, 12, o, p, xx.

Since there is this happy agreement holding with regard to the *existence* of place, Ockham, with a passing reference to Aristotle's discussion, feels quite justified in moving on to consider its more controversial aspect: although all seem willing to admit that place *is*, there seems to be variance concerning just *what* it is.[55]

It is the conception that places are themselves absolute, receptive, spatial lacunae — places as pure extensive quantities of space totally distinct from the extended, located bodies which occupy them — that draws Ockham's dialectical fire.[56] Were places thus existent *per se*. he points out initially, the infinite number of parts into which any located, finitely dimensionate substance is theoretically divisible, would each, severally, require a separate, distinct and absolute place. Thus, any finite "here" in which some substance is situated, would, if places are indeed thus absolute, necessarily consist in an infinite number of distinct places.[57]

Again, if place is posited to be equivalent to some precise quantity of space, it must be granted corporeal status; and if corporeal, then mobile. Now non mobile enjoys eternal quiescence; hence, there will be some time at which these places will be in motion; and, once in motion, one absolute place can only move through, or come to rest in, other absolute places. The theory of separable and absolute place is thus shown by Ockham to involve the ridiculous consequent that each of an infinite number of spatially discrete containers will not only at some time be in motion, but that when the motion occurs, one discrete

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[55] *Phil. Nat.*, IV, 18: "Sicut omne quod movetur, movetur in tempore, ita omne quod movetur, movetur in loco, ideo post considerationem de tempore, restat considerare de loco . . . Quod autem locus sit, manifestum est, nec potest demonstrari a priori, tamen constat quod locus est per hoc: quod corpora localiter mota transeunt de loco ad locum, et in eodem loco succedunt invicem diversa corpora. Alia(s) autem rationes ponit Philosophus . . . (see Aristotle, *Physics*, IV, 1). Quia tamen omnes concedunt locum esse, ideo illas omitto quare eas videas ibi. Quid autem sit locus maiorem habet difficultatem."

[56] *Phil. Nat.*, IV, 19: ". . . Quidam enim . . . (dicunt) quod locus est spatium contentum inter latera continentis, sicut totum spatium contentum inter parietes domus est locus, et sic de aliis." Ockham points also to two other theories of place: "Alii autem (dicant) locum esse materiam, alii autem formam;" but goes on to add that: "(Illae) duae . . . opiniones postremae, parvam vel nullam habent apparentia(m), et modernis temporibus malos defensores habent, quas Philosophus sufficienter improbat. (See Aristotle, *Physics*, IV, 3). Ideo, circa eas, nolo immorari."

[57] *Phil. Nat.*, IV, 19: "Si (locus sit) spatium medium . . . sequeretur quod loci essent infiniti. Ista consequentia patet evidenter et potest declarari multipliciter, uno modo sic: si spatium medium esset locus, tunc aliquid diceretur in loco quia esset praesens spatio; sed ita convenit cuilibet parti totius esse praesens tali spatio sicut toti, aequaliter ergo totum est in loco, et pars quaelibet; sed sunt infinitae partes, ergo loca sunt infinita."

container necessarily becomes the contained of yet another such container.[58]

Ockham pursues relentlessly:

> place is not such a space, because either such a space is other than the located, or not. If not, then place is the placed, and the same thing would be in itself as if in a place. If other — and it is manifestly not something indivisible — then it is divisible and extended; (but it is not extended) any more with respect to any one part than to any other; therefore it is long, broad, and deep, and is, consequently, a body — which cannot be said.[59]

As a final rejection of the theory of place absolute, Ockham raises the question: what kind of a thing could such an absolute place be? It is patently not itself a substance. No more can it be an accident. For if it *were* an accident, there is implied the contradiction that two substances could, at one and the same time, occupy a single site. Every accident, that is, has a subject; and since place cannot be predicated to be the accident of a located mobile — it must be an accident of some other substance extant within the confining limits of the same portion of space which contains the located mobile. And this involves the physical impossibility that two substances are simultaneously occupying an identical spatial location.[60]

In short, Ockham is denying that there obtains in nature an absolute system of distinct and separable places, relation to any one of which will yield the exact physical location of any extended substance.

2.

Place, According to Ockham

Just as there exists no real distinction between an extended substance and its surface,[61] so there can be no real distinction, Ockham holds, between the *place* of some *located* body, and the innermost surface of

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[58] *Ibid.*: ". . . si locus sit spatium ergo locus est corpus. Sed omne corpus est mobile, ergo illud spatium moveri poterit de loco ad locum, et ita loci erit locus. Sed non est verisimile quod aliquod corpus quieverit per tempus infinitum; ex quo, ergo, illud spatium, si sit corpus, movebatur, et numquam quievit continue per tempus infinitum, ergo infinities fuit motum, et per consequens erunt infinita loca, quia infinita loca movebantur infinities ad unum." Cf. Aristotle, *Physics*, IV, 1.

[59] *Ibid.* Cf. Aristotle, *loc. cit.*

[60] *Phil. Nat.*, IV, 19: ". . . locus non sit tale spatium . . . Tum quia duo corpora tunc essent simul, tum quia nec substantia, sicut patet inductive, nec accidens, quia nullum accidens potest esse sine subiecto, ergo oportet ponere aliquam substantiam in qua esset illud accidens, et ita haberetur quod praeter substantiam locatam esset ali(a) substantia infra latera continentis." See also Aristotle, *Physics*, IV, 1.

[61] See above, p. 322.

the *locating*, extended body. Both Aristotle's definition of places: "the furthest limit of the containing body," and that of Averroes: "it is the boundary and terminus," imply, according to Ockham, the truth of this thesis, insofar as it can only be the surface of some locating body which *is* the "terminus," or "boundary," of the located.[62]

Further, application of the principle of economy indicates the utter superfluity involved in positing two distinct things: surface *and* place — where one suffices. Ockham pleads thus for theoretical elegance:

> in vain is that accomplished through more, which can be accomplished through less; for everything which can be said of place can be "saved" without this: that place is a thing distinct from the surface of the containing body — because that will locate, and so will contain, and so will be equivalent to the located, just as if some other thing were posited. Therefore, place is not something other than surface.[63]

Again, if place exists *per se* and is not indissolubly wedded to body as its furthest limit, generic investigation should substantiate its individual status. The fact is, however, that such investigation points to the inescapable truth of Ockham's claim. Place — being neither substance nor quality — is patently in the genus of quantity. As a quantity, place is either discrete or continuous. Obviously, it is not the former. But if continuous, it is either permanent or successive. Assuredly it is in the class of permanently continuous quantities; and since all such quantities have, essentially, linearly mensurable proportions, place must be either line, surface, or body.[64]

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[62] *Phil. Nat.*, IV, 20: "Viso quid non sit locus, videndum est quid est locus . . . non est imaginandum quod in corpore locante sit aliqua superficies vel aliquis situ(s) distinctus totaliter a corpore locante quomodo albedo distinguitur secundum se totam a subiecto, et quod illa superficies, quae est finis vel terminus est locus aequalis locato. Et circa hoc primo ostendendum est quod locus non est aliqua red talis . . . Primo probatur quod locus non sit talis res alia a corpore loca(n)t(e), quia superficies non est aliqua res alia a corpore locato distincta secundum se tota(m), ergo nec locus. Consequentia patet, quia locus et superficies non distinguuntur realiter, quod patet per hoc quod superficies est ultimum corporis, et secundum Commentatorem, est finis et terminus, sed nulla res alia est finis corporis, ergo etc." See also *Logic.*, ch. 46, p. 134; ch. 61, p. 174. From *Phil. Nat.* IV, 20, to its close (Chapters 20, 21, 22), there is literal correspondence — with only the slightest deviations, none of which cause textual aberration — with *Tractatus.*, pp. 69—96. For a summary of the manuscript and text tradition of *Phil. Nat.*, and *Tractatus.*, and their relation to *Expositio.*, see P. Boehner's introduction to *Tractatus.*, pp. 28—30.

[63] *Phil. Nat.*, IV, 20. See also *Logic.*, ch. 61, p. 174.

[64] *Phil. Nat.*, IV, 20: ". . . si locus sit alia res a superficie, oportet quod sit in genere quantitatis, qualitatis, vel substantiae; et non potest poni in genere qualitatis, nec substantiae, ut satis patet, ergo est in genere quantitatis. Et si sic, vel est quantitas continua, vel quantitas discreta; (Non est discreta)

Granting, however, for the moment, that a surface *does* have the capacity for separable existence, "surfaces" would then be accidental predications of extended substances. Now any accident investing a primary subject must necessarily be represented by a part in every part of the substance which it informs; and since an accidental surface can not possibly be thought of as investing *every* substantial part of its primary subject, something is radically amiss. Obviously, the *outermost* parts of the limiting, defining, accidental surfaces of some extended body, cannot be a part in a part of the substance which is confined *within* them. The surfaces of any body, that is, conceived as accidents, must have parts which lie *outside* the body proper; hence, it has parts which do *not* invest parts of its primary subject. "Surface" is clearly *not* capable of existence in divorce from individual, extended subjects.[65]

Similarly, Ockham continues, what position would be taken by those who conceive a surface to be a distinct thing, added as the physical limit of an extended subject, with regard to this question: does each of any two parts of some continuous mobile possess its *own* surface, so that the total surface of any quantitatively continuous subject consists in one "surface" being immediate to another this was a notion sufficiently discredited by Aristotle, Ockham feels, not to merit further refutation. If, on the other hand, it is held that the surface terminating any two parts of an extended body is *one*, then, Ockham holds, the physical division of any continuous body would result in the destruction of the *one* surface, and the creation of two others — one for each of the divided portions. It is impossible, however, to maintain that one surface is

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certum est; ergo est continua. Aut ergo est successiva, aut permanens. Non successiva manifestum est, ergo permanens. Vel est ergo longitudo, vel latitudo, vel profunditas, vel tales dimensiones, et per consequens est linea, vel superficies, vel corpus. Confirmatur: omne quantum permanens continue est longum, latum, et profundum, igitur locus est longus, latus, et profundus, et nihil est cuiusmodi nisi sit linea, vel corpus, vel superficies." Further on *(Ibid.)* Ockham writes: "Item notandum quod hoc nomen 'locus' est nomen relativum secundum Commentatorem, et tamen illud de quod verificatur hoc nomen 'locus' est vere quantitas; et propter hoc ponit Philosophus locum in genere quantitatis . . . (see Aristotle, *Categories*, ch. 6). Sed quia hoc nomen 'locus' est proprie relativum ideo non ponitur per se in genere quantitatis, sed per accidens." See also *Logic.*, ch. 46, p. 134.

[65] *Phil. Nat.*, IV, 20: "Quod autem superficies non sit alia res secundum se totam distincta probatur . . . quia tunc esset accidens et haberet subiectum primum. Tunc quaeritur de isto subiecto primo aut est corpus, aut aliud a corpore. Si primum, tunc in qualibet parte istius corporis erit aliquid superficiei illius quod est manifeste falsum, quia in parte citra illam superficiem non est illa superficies, aut alia pars eius. Nec subiectum primum est aliud a corpore, quia tunc esset substantia; sed omnis substantia extensa est longa, lata, et profunda, igitur habet aliquam partem in profundo quae non est sub aliqua parte illius superficiei, ergo, etc."

destroyed and two new ones are generated as a result of such physical division; no generation ever destroys a specific individual while simultaneously generating, in one and the same subject, a specifically similar individual. And again, how could that surface, conceived as an accidental attribute, possibly have been destroyed? Its subject was not destroyed; nor was its contrary induced; nor has its cause disappeared. Again, after such physical division, does the prime subject of the original surface remain, or not? If not, then some substance, as a result of this division, has been destroyed — and since all of the original *matter* is demonstrably present after such division, only some *form* can have been destroyed. This being so, with reference to the matter of this now non-existent form, Ockham asks the question: "wherein does it remain?" Is it in each of the two divided parts? In neither? or in only one? It is obviously not in *each* of them; nor can it be totally dissociated, existing somehow in separation from *either* of the two; nor is it possible that it is in *one* part only, since there is no better reason why it should invest *one* part, than that it should be in the other. Or, if it is held that the prime subject of the original surface *does* remain after its physical division, then the same indefensible position is involved; for Ockham would once again inquire whether it remained in *each* of its divided parts, in *neither*, or in *one* only — none of which conditions are possible as the same grounds given above can be employed to demonstrate. Ockham holds it patent, then, that his original thesis has been amply substantiated, and that

> place is not a thing apart from a surface, (and that) a surface is not a thing apart from a body.[66]

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[66] *Phil. Nat.*, IV, 20: "Similiter: si superficies sit alia res, accipio duas partes continui et quaero utrum est eadem superficies terminans utramque partem corporis continui, aut aliam et alia(m); si est alia et alia, igitur superficies est immediata superficiei, quod Aristoteles improbat. Si sit una, per divisionem corrumperetur, et generarentur duae superficies, quia non est maior ratio, si remanet illa superficies post divisionem, quod remaneat in una parte, plusquam in alia, et per consequens manet simul in utraque, vel in nulla. Sed impossibile est quod per divisionem una superficies corrumpatur, et duo generarentur, quia generans non destruit unum individuum unius speciei, et generat novum individuum eiusdem speciei in eodem subiecto. Tum quia accidens non destruitur, nisi vel per destructionem subiecti sui, vel per inductionem sui contrarii, vel alicuius incompossibilis, vel per absentiam suae causae, quorum nullum potest contingere in proposito. Tum quia accipio substantiam quae est primum subiectum primae superficiei, et quaero utrum illa manet, vel non. Si non manet, igitur aliqua substantia per divisionem corrumpitur, et non materia, igitur forma. Tunc quaero de materia quae erat sub forma corrupta, ubi manet, vel in utraque, vel in neutra, vel in altera. Non in utraque, manifestum est, nec in neutra — quia tunc separaretur, et esset nova inductio formae, et tunc non esset sola

3.

Objections and Resolutions

Ockham chooses to supplement his conception of the true character of place by employing as a point of departure the flood of objections which his opponents, at this juncture, loose upon his primary assumption of the relationship which obtains between place, surface, and extended body. In the first place, his opponents argue, the furthest limit of a containing body is something distinctly other than the body *of* which it *is* the furthest limit; for were it not, then the containing body would be its *own* furthest limit. And since place, as Aristotle has it, *is* the "furthest limit of the containing body," it follows that a real distinction holds between place and the containing body.[67]

The difficulty here involved, according to Ockham, centers around his opponents' failure to mark a distinction between two senses in which place, as "the furthest limit of the containing body," is to be understood. In the case, for example, of a vase containing water, it can be held that the *vase* is "the furthest limit of the containing body" insofar as it is not incorrect to say that the water's "place" is in the vase; but more properly, in the case at point, it is those parts of the inner surface of the vase which are contiguous with the surface (i. e., the "furthest limit") of the contained water, that represent the true "furthest limit of the containing body." And the relationship between this second, more precise, delineation of place, and the first usage, is as the relationship of a part to the whole: each "place" then, *is* distinct from the containing body, in exactly the same way that a part can be said to be "distinct" from the whole of which it is a part. It is in this sense that Ockham will cede to his opponents that place is *not* the containing body — place, that is, is not the *whole* of the containing body; but is, rather, those of its innermost parts which are contiguous with the outermost extended parts of the contained.[68]

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divisio, quod est impossibile. Nec manet in altera. Tum quia non est maior ratio quare sit plus in una quam in alia. Si primum subiectum manet, aut igitur in utraque parte, aut in altera tantum, aut in neutra, et deducatur idem quod prius. Propter istas rationes, et alias consimiles . . ." etc. See also, *Logic.*, ch. 46, p. 134—5.

[67] *Phil. Nat.*, IV, 21: "Sed contra ista videntur aliqua argumenta. Primo, quia ultimum continentis non est illud continens, quia idem esset ultimum suiipsius."

[68] *Phil. Nat.*, IV, 21: "Ad primum dicendum quod aliquid ultimum continentis est illud continens, et aliquod non; nam accipiendo vas continens aquam, ipsum vas vocatur ultimum continentis . . . praeter, etiam, illud continens ultimum, quaelibet pars vasis tangentis totam aquam vocatur

"Both the Philosopher and the Commentator," Ockham continues, distinguish between a "common container" and a "proper container." The first they call simply: "the containing body;" and the second they call: "the furthest limit of the containing body." Just as is exemplified by the air, and by the furthest limits of the air with respect to some body existing in the air — say, with respect to a stick of wood, or a bird, or some such thing. Because the *whole* air — by accepting "whole" categorematically — *contains* that body, and yet (the whole air) is not its *proper* place; because, that is, it contains that body and many other bodies as well. But the furthest limit of the air — *wherever* it is — is that which contains *only* that (body), and is precisely that body's *proper* place. And that "furthest limit" differs from the "whole" air in just the same way that a part differs from the whole. Therefore, the proper place is not the whole air, but it is a part of this air.[69]

The second objection purports, at one stroke, to demonstrate the complete independence of place from surface, and both from extended body. Since, it is argued — on Aristotle's authority — the *whole body* of air is not the proper place of anything, insofar as place and the placed must be equal; it follows, on the same ground, that no other whole body can be the proper place of a thing. Nevertheless, it *is* true that some *portion* of that whole body of air *is* the proper place equal to some body. And this portion of the container is equal to the *whole* of the contained, rather than a part, because again, if it were equal to but a part of the contained, place and the placed would not be equal. Hence, that containing portion can be equal only to the *surface* of the contained, since only the surface of an extended body confines *all* of its parts.[70]

The argument: the whole air is not the place of something; therefore neither is any other whole body the place of something — is, according to Ockham, a *non sequitur*. Space is a plenum and, as such, ultimately

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ultimum continentis, et quaelibet illarum distinguitur a vase continente, sicut pars a suo toto, et e converso, ita quod iste locus non est illud continens, hoc est, non est totum, sed est pars." Although I translate *ultimum continens* as: "the furthest limit of the containing body," what is meant in this context, is: "the innermost limit of the containing body which is defined by its being in immediate contact with the contained body." For example: the place of a bird in the air at any given moment would be the parts of the air in immediate contact with the parts of the bird's body — still, these parts of the containing body are the *furthest limits*, with respect to its content, and are the *innermost surface* with respect to the continent air.

[69] *Ibid.* See Aristotle, *Physics*, IV, 2; and Averroes, *op. cit.*, Comment 33, fol. IIIIr.

[70] *Phil. Nat.*, IV, 21: "Item dicit Aristoteles quod totus aer non est locus proprius alicuius, quia tunc locus et locatum non essent aequalia; et tunc, qua ratione totus aer non est locus alicuius, nec totum corpus est alterius; et tamen oportet quod aliquid illius sit locus alicuius, et non aliqua pars, propter eandem rationem; ergo aliquod aliud, quod non potest esse nisi superficies."

contains *all* spatially located bodies and stretches in all directions from any one of its furthest limits (which are defined by located bodies) to the outermost heavenly spheres. But from the fact that the air as a whole has many parts not in contact with some one contained body, it does not follow that there is not some body such that some innermost parts of it are in contact with the outermost parts of the located body, and such that this (innermost part of the continent) is the immediate place *(locus primus)* of the located body.[71]

Ockham's reply to the next objection:

> place and the placed are equal; but the containing body is not equal to the contained . . . therefore, etc.;

allows him to elaborate on the meaning of the term "equal" which was previously employed without that linguistic precision upon which he characteristically insists. "When it is said," Ockham writes,

> that place and the placed are equal, it is patent through what has gone before in what mode they are equal; because, namely, (they are equal) according to the furthest parts which are in contact . . . And yet this holds with this: that . . . the outer parts (of the containing body), not touching the located body, may be longer or even broader (than the place of the located).[72]

Physical "equality" then, so far as the relation of place to the placed is concerned, is a term yielding the information that the furthest limits of the containing body are in immediate and intimate contact with the furthest limits of the contained.

Ockham's solution of the fourth objection allows him, subsequently, to enlarge on a distinction barely touched upon in his reply to the second objection: that between the *first* and *second* place of a thing. The argument itself, designed to demonstrate the divorce between place and the placed, takes its point of departure from Averroes' stand that there are two different places, a *first* and a *second;* and that a subject is in a *second* place by virtue of its being in a *first* place. For example: something is located in the air when it is in the furthest enveloping limit of the air.

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[71] *Tractatus.*, p. 77—8: "Per idem patet ad aliud, quod non totus aer, scilicet qui continet illud corpus et aliud, est locus proprius et primus illius, et hoc quia habet multas ultimas partes, quae non tangunt illud corpus praeter partes superiores, quae tangunt aliam sphaeram superiorem. Et ideo non sequitur: totus aer non est locus proprius illius, igitur nec aliquod aliud corpus totum est locus alicuius, quia multae sunt partes ultimae aeris totius, quae non tangunt aliquam partem illius locati. Sed non est sic de quocumque alio corpore, quia alicuius corporis nulla est pars ultima interior, quin tangat aliquam partem ultimam illius corporis locati, et ideo est locus primus illius corporis."

[72] *Phil. Nat.*, IV, 21; cf. Aristotle, *op. cit.*, IV, 4.

Hence, Ockham's opponents conclude, the total body of air is the *second* place of the located body; while the furthest limit of the air, which contains the body itself, is its *first* place. Consequently, it is held to be demonstrated that whereas the *first* place is related to the *second* place, *both* places are physically distinct from that which is enveloped.[73]

"It is obvious," Ockham replies,

that the Commentator is speaking of the *whole* air containing *many* bodies; which is, therefore, not the *first* place of *any* of these bodies. But in that whole air, a body is said to be located because it is in *some part* of the body of air, and any furthest part directed against the located touches some part of the located. And that the Commentator *is* speaking of the whole air, is clear, because he says that the bound (i. e., the furthest limit) of one thing (i. e., the whole air) is the *proper* place of a thing which is said to be in the air, and (the *second* place is) something else which contains itself and the other. *Verbi gratia:* the bound of the whole air, and, therefore, the whole air, is the *second* place; but that air equal with respect to length, breadth, and depth to the located, is its *proper* place; and these two "airs," so to say, are distinguished as a whole and a part.[74]

Thus far the chief merit of Ockham's replies to his adversaries' objections lies rather in their efficacy for removing those sophistical difficulties raised on linguistic grounds, than in a constructive extension of his view of place and the placed. This, however, is not to be the case with regard to a final objection. For in his reply to this argument:

every body is mobile . . . but place is immobile,[75]

designed, obviously, to demonstrate the independence of place from the placed — Ockham expands materially on his initial thesis.

Now several previous attempts — two of which Ockham will examine — to preserve the theoretical immobility of place have been, as far as Ockham is concerned, dismally abortive. One school sought to preserve that immobility upon which Aristotle has insisted, by the nice, if devious method of marking a distinction between two ways in which any extended object could be said to be "in a place:" *materially*, and *formally*. Place is, of course, immobile when considered from the *material* aspect — i. e., as being the place defined by the "furthest limit of the

[73] *Phil. Nat.*, IV, 21: "Item: Commentator (see Averroes, *op. cit.*, Comment 33, fol. 111r) . . . dicit quod alius est locus primus, alius est locus secundus; et dicit quod res est in secundo loco quia est in primo, et exemplificat sicut aliquid est in aere, est quia, in ultimo fine continente ipsum. Igitur, secundum eum, aer est locus secundus, et ultimum continens corpus ipsum locus primus; et per consequens sunt distinctae res."

[74] *Phil. Nat.*, IV, 20.

[75] *Phil. Nat.*, IV, 20: "Omne corpus est mobile; secundu(m) Philosophu(m) locus est immobilis ut patet in diffinitione, ergo, etc." Cf. Aristotle, *Physics*, IV, 4.

containing body" in intimate contact with the surfaces of the located. When, however, that extended body *changes* its place, its *former* place can still be considered as immobile viewed from the *formal* aspect — i. e., with respect to the order of the universe.[76]

This thesis, preserving under all circumstances the immobility of place, can be illustrated by analogy. A ship tied at anchor in a flowing stream is not always, in the *material* sense, in the same place, insofar as its surfaces are in contact with first one, and then another, *part* of the water in which the entire body of water consists. It is, however, viewed *formally*, always in the same place — i. e., *with respect to the whole stream;* and seen thus, in the *formal* sense, the place of each part of the water, of the ship tied at anchor, and by further reference the whole body of water itself, are all *immobile.*[77]

Passing now to a more generalized statement, the proponents of this attempt to preserve the immobility of place, point out that since precisely the same absolute spatial relationship obtains at all times

[76] *Phil. Nat.*, IV, 22: "Quantum ad ultimum argumentum de immobilitate, est sciendum quod istam immobilitatem loci diversi diversimode nituntur salvare. Dicunt enim aliqui, quod in loco est duo considerare; scilicet, illud quod est materiale ibi loci, et est superficies corporis continentis; et illud quod est ibi loci formale, scilicet ordo ad universum."

[77] *Phil. Nat.*, IV, 22: "Sicut videmus quod quaelibet pars fluvii movetur, totus autem fluvius est immobilis quodammodo, quia quamdiu durat cursus aquarum, tamdiu cursus retinet eundem situm. Navis, enim, si ligetur ad anchora(m), ut non simul cum flum(ine) fluat, dicetur se(m)per esse in eodem loco; quia licet alia et alia aqua sit subter eam, et licet navis non semper habeat eundem ordinem ad partes fluvii, quia partes illae sunt mobiles, quia tamen quamdiu sit ligata est in eodem loco respectu ad totum fluvium, propter quod totus fluvius dicitur quodammodo locus, quia locus navis habet immobilitatem ex ordine ad totum fluvium." Ockham here appears to be examining the theory of St. Thomas Aquinas. In *Commentaria in Octo Libros Physicorum Aristotelis*, Lib. IV, Cap. IV, Lect. VI, 14, St. Thomas writes: ". . . sic igitur fluvius totus inquantum est immobilis, est locus communis. Cum autem locus proprius sit pars loci communis oportet accipere proprium locum navis in aqua fluminis, inquantum habet ordinem ad totum fluvium ut est immobilis. Est igitur accipere locum navis in aqua fluente, non secundum hanc aquam quae fluit, sed secundum ordinem vel situm quem habet haec aqua fluens ad totum fluvium: qui quidem ordo vel situs idem remanet in aqua succedente. Et ideo licet aqua materialiter praeterfluat, tamen secundum quod habet rationem loci, prout scilicet consideratur in tali ordine et situ (ad) totum fluvium, non mutatur. Et per hoc similiter accipere debemus quomodo extremitates corporum mobilium naturalium sint locus, per respectum ad totum corpus sphaericum caeli; quod habet fixionem et immobilitatem propter immobilitatem centri et polorum. Sic, igitur licet haec pars aeris quae continebat, vel haec pars aquae effluat et moveatur inquantum est haec aqua; tamen secundum quod habet haec aqua rationem loci, scilicet situs et ordinis ad totum sphaericum caeli, semper manet. Sicut etiam dicitur idem ignis manere quantum ad formam, licet secundum materiam varietur consumptis et additis quibusdam lignis." This latter part of St. Thomas' statement will come in for its share of criticism by Ockham. See below, pp. 350—1.

between the furthest limits of the universe, and the center of the earth, *all places in between are, in the formal sense, immobile.* Should the furthest limits of the containing body of air, for example, defining the simply *material* place of some extended body in space be changed by the action of a capricious wind, the immobility of place is *still* preserved, owing to the fact that that body, by ultimate reference to the poles of the world and the center of the earth, is still, *formally*, in the same place.[78] It seems that Ockham will be forced here from the consideration of a fundamentally naive conception of distinct and absolute *places*, to a much more sophisticated and generalized theory of absolute *space*.

In rebuttal, Ockham points out that if places *were* the formal order obtaining with respect to some absolutely privileged system (i. e., the immobile center of the earth, and the immobile poles of the world), that order would be formally in the *locating* rather than in the *located* body; and if order were an accident of the *locating* body, then a *change* in the immediate physical environment of any located body would result, necessarily, in a complete *change of order*.[79] "It is confirmed," Ockham writes:

> because just as an absolute accident, numerically one, cannot be in diverse subjects, so that accident (of order) — which these men posit to be respective — cannot be numerically the same and in diverse subjects. Therefore, that order does not remain in a moved subject having that order; therefore, that (order) does not remain immobile when the surface of the containing body has been changed; consequently, place is neither *materially* nor *formally* immobile.[80]

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[78] *Phil. Nat.*, IV, 22: "Similiter, et si quaelibet pars universi sit mobilis, tamen universum non mutat locum suum secundum substantiam, et locus sursum dicitur esse immobilis, quia concavum orbis Lunae semper est in eadem distantia ad centrum, nec est in uno tempore plus sursum quam in alio; et sicut locus sursum est immobilis, ita locus deorsum. Est enim immobilis, quia centrum immobilitatis perseverat, sic ergo in ordine ad universum habet locus immobilitatem. Et, ideo, si aliquid in terra quiesceret, et vento flante moveretur, et tolleretur totus aer, qui est circa ipsum, non diceretur mutare locum, quia eundem haberet ordinem ad totum universum quem prius habuit, ergo. etc. Probat idem sic: quia licet te quiescente posset moveri aer qui est iuxta te, vel aliquod corpus circumdans te, semper tamen dicereris esse in eodem loco, quia semper es in eadem distantia ad centrum et ad polos mundi qui sunt immobiles, et ideo per respectum ad ista locus dicitur esse immobil(i)s."

[79] *Phil. Nat.*, IV, 22: "Sed ist(i) non declarant immobilitatem loci, quia si locus sit formali(ter) ordo, vel distantia ad centrum et ad polos mundi, ille ordo erit formaliter in corpore locante, et non in corpore locato, quia si esset in corpore locato, sequeretur quod locus formaliter esset in corpore locato formaliter, quod est contra Aristotelem. Si, ergo, ille ordo est in locante, ergo mutato loca(n)te mutatur ordo, quia cum ordo sit quoddam accidens, secundum istum errorem, impossibile est ordinem illum esse immobilem mutato habente eundem ordinem."

[80] *Ibid.*

Further, to conclude that a ship at anchor in a flowing stream is always in the *same place* because it maintains the same position with respect to the *entire* stream, is to ignore the necessary distinction between *common* and *proper* places. Ockham writes:

since the ship is located, it is in the stream; and it is manifest that the *whole* stream is not the ship's *proper* place. Hence, some *part* of the stream is the ship's proper place, and then it is argued thus: this *part* of the stream, which is the proper place of the ship, does not always have the same distance with respect to the whole stream; consequently, the place of the ship is *not* always the same.[81]

Ockham's final criticism brings the whole theoretical structure here under scrutiny, tumbling about the heads of its defenders. The fundamental conception — that which made it at all reasonable to assume the existence of an invariant formal order — that there exists in nature some absolutely immobile point of reference by means of which an invariant order *can* be said to obtain, is treated by Ockham, thus:

and that which was said in the second reason, concerning the immobility of the poles and of the center, proceeds from a false conception — namely: that there are in the heavens some immobile poles, and in the earth one immobile center. This is impossible. For it is impossible that the subject of some accident be locally moved while the accident itself, if it remains the same in number, be *not* locally moved. But any subject of an accident, and any substance in the heavens, *is* locally moved; therefore, the poles either do not remain (numerically) the same, or they will be locally moved.[82]

And if it be said that a pole, which is indivisible, is *not* a part of the heavens, since the heavens are a continuum and a continuum does not consist in indivisibles — against: if there *is* a pole, and it is *not* a part of the heavens, it is either, therefore, a corporeal or an incorporeal substance. If corporeal, it is therefore divisible, hence it is not indivisible. If it is an incorporeal substance, it is, therefore, intellectual, and is, consequently, intelligence; and so intelligence would be a pole of the heavens, which is ridiculous. Consequently, it is impossible to posit such an indivisible accident, or such a substance, which may be a pole.[83]

The second attempt to preserve the immobility of place is greeted by Ockham with partial approval. This attempt, he feels, although still falling short of the sought-for mark on theoretical grounds, more closely approximates the truth than did the first. Place, according to this latter theory, is a *relation;* a relation which is totally *destroyed* when either

[81] *Ibid.*

[82] At this point the *Tractatus.*, p. 85, contains an additional passage: "et si dicatur quod poli non sunt accidentia, sed substantiae — contra: tunc in caelo esset aliqua pars caeli non mota localiter;" which is not found in *Phil. Nat.* The critical apparatus in *Tractatus.*, does not note this as an omission in the *Phil. Nat.*

[83] *Phil. Nat.*, IV, 22.

the contained is locally moved, or the containing body in intimate contact with the contained, is somehow disturbed. The place of anything, it is further contended, is not of necessity *numerically* one. Consider, for example, the instance in which a playful wind-current is constantly whipping up those "furthest limits" of the containing air contiguous with some extended body. Obviously, place, as a relation, is being continuously destroyed, and one place is succeeding to another; these places are, patently, *not* numerically one and the same — they are, however, it is held, *one through equivalence.*[84]

This opinion meets with Ockham's approval in this: that it posits, in the case where the containing body is disturbed, place to be *other than one in number.* Insofar, however, as it posits place to be destroyed when a *subject* is locally moved, Ockham will take issue with it; for this, he holds, is grounded in the specious assumption that place is "a certain relation *really distinct from the locating body.*" "Such a relation," he writes,

> is *not* the furthest limit of the containing body, therefore, it is not place; consequently, notwithstanding that such a relation is destroyed, it does

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[84] *Phil. Nat.*, IV, 22: "... Alii magis veridici dicunt quod quando aliquod tale corpus movetur circa quiescens, non manet idem locus numero, sed (est) alius et alius numero, (et tamen idem locus) per aequivalentiam. Ideo dicunt quod locus est alius, tamen dicunt quod locus est immobilis, quia nullo modo potest moveri locus, sed quando superficies movetur ille locus corrumpitur, et illa est relatio, quae corrumpitur subiecto illo moto localiter." Ockham here appears to be examining Duns Scotus' theory. See Scotus: *Quaestiones in secundum librum sententiarum*, dist. II, qu. 6: "Dico ... locus habet immobilitatem oppositam motui locali omnino, et incorruptibilitatem secundum aequivalentiam per comparationem ad motum localem. Primum patet, quia si est aliquid modo mobile localiter, quantumcumque accipiatur per accidens, et ei assignari alius et alius locus, sicut licet similitudo moveatur quasi accidentaliter per accidens, quia scilicet in quarto vel in quinto gradu, quia primo corpus, et per hoc superficies, et per hoc albedo, et per hoc similitudo; tamen superficies, vel albedo, vel similitudo, vere est, quando movetur in toto corpore in alio et alio loco. Similiter tunc aliquid quiescens posset moveri localiter, nam quod habet alium et alium locum successive, localiter movetur; fixum autem posset habere alium et alium locum continentem, si moveretur locus per accidens. Secundo ... licet locus corrumpatur moto eius subiecto localiter, ita quod moto aere localiter non manet in eo eadem ratio loci, quae prius ... Nec eadem ratio loci potest manere in aqua succedente, quia idem accidens numero non potest manere in duobus subiectis, tamen illa ratio loci succedens, quae est alia a ratione praecedenti secundum veritatem, est eadem praecedenti per aequivalentiam quantum ad motum localem, nam ita incompossibile est localem motum esse ab hoc loco in hunc locum, sicut si esset omnino idem locus numero." See also P. Duhem's article: "Le Mouvement Absolu et le Mouvement Relatif," (cinquième article), in *Revue de Philosophie*, vol. XII, March (1908), where Duhem points out (p. 247) that Ockham "se sépare nettement de Duns Scot au sujet de la nature même du lieu. Pour le Docteur Subtil, le lieu est une certaine entité dont le fondement se trouve en la surface de contact du contenant au contenu."

not follow that *place* is destroyed, and consequently the immobility of place does not follow from its opposition to local motion. Similarly: no property of place corresponds to such a relation; since it (place as a relation) neither *contains* such a located, which (properties) are, however, the precise grounds of place.[85]

Having disposed thus of previous attempts to retain that *immobility* of place upon which Aristotle had insisted, and to eschew commitment to the indefensible theory of distinct and absolute places, while yet giving a coherent physical account of motion from place to place, Ockham directs his own energies to an explication of how the immobility of place is to be "saved."

Ockham commences by pointing out that every empirically encountered subject is, in the nature of things, generable and corruptible. And since all such generables and corruptibles are either substances

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[85] *Phil. Nat.*, IV, 22: "Ista opinio est vera quantum ad hoc, quod ponit quod est alius locus numero in tali casu quando corpus circumdans locatum movetur localiter. Sed quantum ad hoc, quod ponit quod locus corrumpitur per hoc, quod subiectum movetur localiter, fals(a) est, et procedit ex falsa imaginatione, scilicet: quod locus sit quaedam relatio distincta realiter a locante . . . et . . . talis relatio non est ultimum corporis continentis, ergo non est locus . . ." etc. For Ockham the category of *relation (ad aliquid)* is similar to the category of *quantity* in this: that both quantitative and relative terms are connotative, and in significative employ stand primarily for either an individual *substance*, or an individual *quality*, and *not* for an absolute and real *relation* or *quantity*. See the *Tractatus de Praedestinatione . . . op. cit.*, the main thesis of which is concerned to prove that neither predestination nor reprobation are real relations representing entities distinct either from God or from the predestined or reprobated person. See also the "*Quaestio De Relatione* attributed to William Ockham," by Gaudens E. Mohan, *Franciscan Studies*, vol. XI, no. 3 and 4 (1951), which Tract, although it appears to have been compiled by someone other than Ockham, is nevertheless at one with his teachings on relation as found in *Sent.*, I, dist. 30, qu. 3; *Quodl.*, VI, qu. 8—25; and VII, qu. 1—25; *Logic.*, ch. 49—55, pp. 140—163; and *Tractatus.*, pp. 35—6. P. Boehner, in commenting on the *Tractatus de Praedestinatione . . .* (*op. cit.*, p. 50—51), notes carefully that "it is not easy to identify those Scholastics who were of this opinion (i. e., that predestination and reprobation are real relations). One thinks of Scotus, but though Scotus admits that a *relatio realis* is a different entity from the terms related, it is not certain, nor is it even probable, that he admitted passive predestination or reprobation to be a real relation. For he makes a clear distinction between *relationes reales* and *relationes rationis*, and it seems that he did not consider even the relation of time or the *praedicamentum quando* as a separate relation-entity. With some caution, we dare to suggest that Walter Burleigh, a contemporary of Ockham, adhered to the criticized opinion. At least he admits the category *quando* to be a real entity that is added to the thing which is in time." For more on Ockham's theory of relation, see L. Baudry, "Apropos de la Théorie Occamiste de la Relation," *Archives d'Histoire Doctrinale et Littéraire du Moyen-Age*. Vol. IX, (1934); P. Doncoeur, "Le Nominalisme de Guillaume Occam," *Revue Néoscolastique*, (1921); G. Martin, "Ist Ockhams Relationstheorie Nominalismus?" *Franziskanische Studien*, (1950), and by the same author, *Wilhelm von Ockham*, (Walter de Gruyter and Co., Berlin, 1949).

or accidents; and since all substances and accidents are mobile, either *per se* or *per accidens*,[86] there is no gainsaying the conclusion that place, which is one of those subjects witc which we commonly traffic, is, either *per se* or *per accidens* — mobile!

However, Ockham continues before a chorus of outraged voices can shout him down, it is by virtue of speech on the literal plane — speech proper to a discussion of place on the scientific level — that place should be thus accorded mobile status. A mode of speech more suitable to the plain man's discussion of place can, following Aristotle, hold place to be immobile. Aristotle, Ockham feels, found it extremely useful as a forceful illustrative device to discuss place *as if* it were immobile. In this way, Aristotle was enabled to sharply accent the fundamental properties of place; and if some of the Philosopher's literal-minded readers mistakenly assumed him to mean that place was, *per se*, immobile, they are gravely misinterpreting his original intent. All that Aristotle meant to intimate, was that for purposes of discussion, place could be *considered* as immobile: but its true immobility, is *immobility through equivalence* — which is tantamount to the proper observation that place is, in fact, mobile.

Ockham expands thus on "immobility through equivalence," indicating the efficacy of this conception for satisfying all the requisite properties of place in relation to the placed; subsequently, he adds a clarification of the way in which a place can be conceived of as "distinct."

> Whence, when some one part of a (contained) body is in some (containing) body, and some other part (of the same contained body) is in another (containing) body of another species — as when a stick of wood is thrust into the bottom of a stream (so that its top is still *above* water), one part is contained by the water, and another by the air, and another by the earth — still, it is in the same (one) place *through equivalence*. Similarly: when the (containing) body around some resting body is continually moved, it (the resting body) is in *one place through equivalence*. So that, with regard to "saving" the quiet of the located body, and other things are said of place

[86] For Ockham, the predication *per se* of an attribute to a subject considers either an intrinsic element of the subject (which is a predication *per se primo modo*), or it is the predication of a property not expressed in the essential definition, but follows from the essential definition (*per se secundo modo* — see above, p. 326, n. 20, where "time" is predicated *per se* in this second mode of "motion").

A predicable *per se* is opposed to a predicable *per accidens*, in that the predication *per accidens may or may not* belong to the subject. "Man is rational" is a *per se* predication *primo modo* since "rational" is a part of the definition of "man." "Man is risible," on the other hand, is a *per se* predication *secundo modo*, since this predicate does not express an essential element of the subject but expresses rather a property which follows necessarily from the nature of man as a rational animal. See *Logic.*, ch. 37, pp. 96—98.

and the placed, they only lend strength to this: (that) place is *numerically distinct* and nothing more. And it is this for place itself to be distinct: place (is) *numerically one through equivalence.*[87]

This notion of *equivalent immobility* "saves" the curious consequent which follows when the *place* of some body is continuously *changed* owing to accidental circumstance, while the body itself is *lying immobile.* A body whose places are continuously changing about it, is not, according to Ockham, necessarily in local motion; it is only in local motion if it were such that it *would be* continuously in different places *if* place *were* immobile — that is, the situation presents a paradox *only* if places are postulated to be *per se* immobile; which Ockham's conception of "immobility" — immobility through equivalence — eschews the difficulty entirely. Even if the immediate places of a body are many, or are changing, as long as these places are equivalent to one place as determined by their relation to the center and periphery of the world, that is considered to be in one place, and at rest.

And this was the Philosopher's intent when he said that place is as a transmutable vase; because just as a vase, (it) can be transmuted, although it remains immobile according to equivalence with respect to the water or other contents of the vase.[88]

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[87] *Phil. Nat.*, IV, 22: "Ideo, de virtute sermonis proprie loquendo debet concedi quod locus est mobilis, quia nihil est in istis inferioribus generabilibus et corruptibilibus quin sit mobile motu locali per se, vel per accidens, quia omne quod est in istis inferioribus vel est substantia vel accidens. Si sit substantia, sive sit materia, forma sive compositum, adhuc est mobile, patet inductive. Si autem accidens, et suum subiectum sit mobile, est mobile per accidens; et ideo locus oportet esse mobile per se, vel per accidens . . . Verumtamen pro intentione Philosophi est sciendum quod Philosophus intendit dicere quod locus est immobilis per aequivalentiam, hoc est, quod tantum valet locus ad salvandum omnia quae ponuntur de loco, ac si realiter esset immobilis, et ita possunt in eodem loco sibi succedere diversa corpora loco mutato, sicut possent si locus esset immobilis. Similiter est de omnibus conditionibus propriis ipsius loci, quod ita possunt salvari sicut si locus esset immobilis simpliciter, et nihil aliud intelligo per locum esse immobilem secundum aequivalentiam. Unde quando aliquod corpus est secundum unam partem in aliquo corpore . . ." etc.

[88] *Phil. Nat.*, IV, 22: "Et si dicatur quod omne quod continue est in alio loco et alio, movetur localiter, dicendum quod non — sed solum illud corpus, quod taliter se habet quod esset in alio et alio loco, etiam si locus esset immobilis, vere movetur localiter. Et ita non est in proposito. Nam isto casu posito, si locus esset immobilis, continue esset in eodem loco de facto, quamvis posset esse in alio. Et hoc intendit Philosophus quando dicit . . ." etc. Cf. Aristotle, *Physics*, IV, 4. Further on *(ibid.)* Ockham writes: ". . . locus et vas non differunt nisi secundum superius et inferius, nec aliam differentiam intendit Philosophus et Commentator dare inter locum et vas. Et si dicatur, quod si vas esset proprie locus, vere, quando aliquid moveretur ad motum vasis, vel non moveretur, vel manens in eodem loco moveretur — dicendum est, quod tale motum vere est in eodem loco sibi proprio, quando tamen idem locus numero est in diversis per aequivalen-

4.

The Universe as a System of Systems

Position, so far as Ockham is concerned, is fundamentally position within a particular *system*. "When the Philosopher," he writes,

> said that the *whole* stream is more the place of the (anchored) ship that is some *part* of the stream . . . he meant that some condition of place agrees more to the whole stream (than to a part), for the whole stream does not lose its total place to acquire another. Still, the whole stream is not the place of the ship other than on the account of its parts; but first on account of *one* part, and then on account of another; hence, the stream is always the place of the ship while the ship rests — that is, however, not the case with respect to some *part* of the stream. And this is the reason why the *whole* stream is more the place of the ship than is some part.[89]

Whereas, that is, the ship is constantly changing places with respect to *one* system (although it is not in local motion insofar as these places are equivalent to but one), it is, with respect to *another* system, to all intents and purposes, *at rest*. Ockham continues, italicising the disparity which may obtain between position in respect of one system as compared to another, by pointing out "yet another reason

> why the whole stream is said to be more the place of the ship than are some of its parts. Because in the resting ship and the stream there is neither augmented nor diminished, in the whole time, the distance between the furthest parts of the stream and the ship itself, although the stream has, at diverse times, diverse furthest parts. And this is not the case as regards some *part* of the stream which was, previously, the place of the ship.[90]

Patently, this conception of systems within systems, as of contained within containers, can be applied over and over: this water is at rest with respect to its containing vase; this vase, with respect to a containing ship; this ship, floating downstream, with respect to its proper place — while all of these subjects, contained and container alike, in respect of the system provided by the relatively stable stream-banks — *are in motion*. Yet, when in this sequence of referential systems, the ultimate system — the regular and majestic motion of the containing and un-

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tiam, hoc tantum valet ad hoc, quod corpus existens in eo moveatur, ac si esset aliud et aliud vas, et alius et alius locus. Et ideo concedo, quod idem manens in eodem loco proprio movetur, non tamen manet in eodem loco communi, nec iste idem est unus numero in eodem loco num(ero), sed mutat locum; et ideo existens in eo movetur localiter. Unde in talibus est magis difficultas vocalis quam realis, et magis potest deduci ad inconveniens vulgo, quam sapientibus."

[89] *Phil. Nat.*, IV, 22. Cf. Aristotle, *op. cit.*, IV, 4.

[90] *Phil. Nat.*, IV, 22.

contained[91] heavens — is approached, *there is no fixed, absolutely immobile, reference point.* True, the motion of this outermost system is uniform enough to provide the temporal yardstick by means of which relatively difform "inferior" motions are numbered; still, aside from this normative regularity, the "superior" reference system is no way privileged. The universe, as Ockham sees it, in respect of motion and position, consists in a system of systems.[92]

Ockham cheerfully grants that this conception of the relativity of motion and position commits him to the stand that place must be *in* a place if it can be said to be *in motion* with respect to some system; but he refuses to concede that the inevitability of this commitment is an any way destructive of his entire conception, or counter to Aristotle's precepts. The furthest limits of a containing body define the position of a *contained* body, not the *continent* body. The air, by example, is the place of some body by virtue of the fact that some furthest limit of the air is contiguous with all facets of that body; still, at all times, this contained body has the potential capacity to change from one

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[91] The fact that the heavens *are* uncontained occasions a theoretical difficulty which Ockham obviates by adopting Averroes' position. Ockham (*Phil. Nat.*, IV, 22) writes: "Item . . . secundum opinionem Commentatoris (see Averroes, *op. cit.*, Text 43, fol. 116r), quod caelum est in loco per accidens, et ita quod aequivoce dicitur caelum esse in loco et alia corpora. Verumtamen diffinitio quam dat Philosophus de loco (see Aristotle, *op. cit.*, IV, 5), non competit caelo per se, nec per accidens; quamvis enim haec sit vera: 'caelum est in loco per accidens,' haec tamen est falsa: 'caelum est in ultimo corporis continentis per accidens,' quia nec est in ultimo per se nec per accidens. Et propter hoc dicit Commentator quod haec diffinitio quam dat de loco est impossibile, quod sit communis omni corpori simplici circulari et rotundo, scilicet ultimo caelo. Si tamen ista diffinitio competeret ultimo caelo, omnis diffinitio loci esset saltem praedicabilis de caelo per accidens. Et ita patet quod ultimum caelum et alia corpora aequivoce sunt in loco, et caelum esse in loco per accidens non est aliud quam caelum continere aliquod quiescens quod est in loco per se tamquam continente ipsum."

[92] *Phil. Nat.*, IV, 22: "Et sic, per istam rationem, potest assignari ratio, seu causa, quare aliquid dicitur esse in toto caelo, quia scilicet, corpore quiescente aequalis est distantia ad omnes partes ultimas caeli, ita quod omni hora est verum dicere quod corpus tantum vel tantum — accepta aliqua determinata quantitate mensuretur — et hoc corpus aequaliter distat ab omnibus partibus ultimi caeli; et propter istam rationem corpus aequaliter distat ab omnibus partibus ultimi caeli; et propter istam rationem dicitur corpus quiescere in terra quantumcumque tam caelum, quam aer, movetur. Verbi gratia: ponatur, gratia exempli, corpus quadratum, et sit una pars eius 'a', secunda, 'b', tertia, 'c', quarta, 'd', si tunc 'a' distat a partibus superioribus per centum miliaria, et 'b' distat tantumdem a partibus dextris, et sic de aliis; et tunc dico quod haec erit vera: hoc quadratum quiescit sive caelum moveatur, sive non, dummodo non moveatur motu recto, sed motu circulari. Et ita bene salvabitur quies illius corporis et aequalis distantia ad caelum si quaelibet pars caeli moveatur circulariter, sicut si non moverentur, et sicut si essent poli immobiles, sicut aliqui imaginantur, et ideo immobilitas polorum nihil facit."

location to another, which fact in no way militates against the similarly obvious fact that all of these possible new positions are themselves *contained* — are themselves *in a place.*[93]

Now place, as a furthest limit, involves a continent body just as immediately as it does the content with whose every facet it is contiguous. Hence, a *change* of place, if place is truly mobile, will involve the furthest parts not only in a change with regard to the content, but also with regard to the continent of which it is part. Place, in brief, if it be mobile, is not only *in* a place, bur must somehow have the capacity to be moved to *another* place; and Ockham, who has postulated the mobility of place, is faced now with the problem of explaining how this can be accomplished.

Initially, he focusses on the furthest limits of the continent. The *whole* continent, that is, is not the proper place of anything, and is not subject to the mobility in question. Only that *part* ot the continent which is, truly, a place, can be moved, and this specialized portion may be moved, according to Ockham, in two ways. In the first way, those furthest limits which were the place of some extended body are swept into one conglomerate; as, for example, when the wind flows about some resting body and "runs together", and drains off, those parts of the air which constituted the proper place of the located. In this way place is moved, in that lacking a content it is no longer a place, but is itself, now, *in* a place. In the second way, the proper place of some body does not become "conjoined", but retains its original properties excepting only that it now possesses a content *differing* from the original — i. e., it becomes the furthest limit of the containing body in respect to *another* contained. In the first way, place was moved in that it surrendered its content to return to the undifferentiated mass of the continent; in the second way, place was moved in that it surrendered one content for another.[94]

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[93] *Phil. Nat.*, IV, 22: "Et si arguitur contra praedicta quod locus non potest moveri, quia tunc locus esset locatus — dicendum quod locus vere movetur, et vere est in loco. Aer enim vere est locus alicuius, et tamen vere est in loco, sicut qui continentur ab alio, non tamen est in loco per ultimas partes contiguas locato, sicut non continetur ab alio manentibus illis partibus quibus illae partes ultimae, et omnes partes ultimae contiguantur alteri, sed per eas continent, et non continentur, et hoc sufficit ad intentionem Philosophi."

[94] *Phil. Nat.*, IV, 22: "Et si dicatur quod omne quod movetur requirit aliquem locum in quem recipitur, sed locus non movetur per partes non contiguas corporis continentis et movetur per partes contiguas contento, per quas est locus, ergo per istas vere acquiret locum alium, et ita locus ex ea parte qua est locus vere in loco esset — dicendum quod non omne

"And so it is **obvious,**" Ockham concludes,

that place is truly mobile. It is, however, immobile through equivalence; because with regard to "saving" many things which are said of place — chiefly in respect of "saving" the motions and rests of natural bodies on account of which (states) place is mainly posited — it suffices that place be mobile. For both the rest and the motion of bodies can be "saved" if place is mobile, just as if place is immobile: nay, more: for except that some place were mobile by means of circular motion, as (are) the heavens, the rests and motions of bodies could not be ("saved" at all).

This and nothing other is the intention of the Philosopher and the Commentator. And all of the Philosopher's and Commentator's writings which seem to be contrary should be glossed in this mode. The Philosopher is not to be understood as saying that place is immobile simply *(simpliciter)*, so that it can in no mode be moved; for the furthest limits of the heavens are, according to him, mobile, and yet they are in a place. Since (the heavens) are not moved rectilinearly, but circularly only (their motion) suffices to "save" the immobility of place . . . And it must be said similarly of the middle (of the earth) that it makes no difference whether it is mobile simply, or immobile, provided that that which is *at* the middle of the earth, always, as concerns its furthest parts, is equidistant from the superior parts of the heavens, and so witb other (located) things. And, therefore, this identity of place through equivalence is always attended, in inferior things, by equality of distance with respect to the superior and inferior parts of the heavens.[95]

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quod movetur, acquirit alium locum quantum ad omnes partes suas, et ideo non movetur nisi quantum ad suas ultimas partes quibus contiguatur contento, quibus acquirit alium locum. Sed potest moveri dupliciter per istas partes: quia aliquando tales partes per hoc, quod moventur coniunguntur localiter ut cum pr(i)mo partes aeris concurrunt quando auferentur a corpore quandoque circumdabant; aliquando vero partes non coniunguntur, sed remanentes semper aequaliter distant. In primo casu partes istae ultimae quae primo erant contiguae locato, moventur, ut sint in alio loco et non ut fiant locus alterius; quia ex hoc ipso, quod coniunguntur, non sunt locus quia nihil ab ipsis continetur. In secundo casu, non moventur partes istae, ut sint in alio loco, sed ut sint locus alterius; sicut, si aer continue fluat a ligno, cuius est primo locus, ad lapidem contiguum illi ligno, movetur, ut sit locus lapidis qui prius est locus ligni, et e converso."

[95] *Phil. Nat.*, IV, 22; cf. Ockham's whole discussion of place in *Altaris.*, esp. ch. VI, pp. 189 and ff. In another place (*Phil. Nat.*, IV, 22), Ockham, with regard to the notion of a center of the earth writes: "Immobilitas et identitas loci per aequivalentiam non est attendenda ex medio mundi nisi quia primo att(en)denda est ex immobilitate caeli motu recto; quia enim caelum non movetur, nec superius, nec inferius, ideo dicitur medium mundi esse immobile per aequivalentiam, quod tamen vere est mobilem quamvis terra secundum se totam nu(m)quam moveatur." The theoretical utility of this "center" is shown by Ockham to consist in this: "quod locus sursum et locus deorsum accipienda sunt in comparatione ad centrum, et ideo immobilitas unius indivisibilis centri, secundum quod aliqui imagina(n)tur, nihil facit ad hoc, quod unus locus sit sursum et alius deorsum — nec ad hoc, quod locus sit immobilis, vel idem — sed hoc solum: quod centrum non movetur motu recto. Et ideo omnis locus qui plus appropinquat ultimae parti centri, quam alter, est locus deorsum, et alter sursum." Cf. Aristotle, *op. cit.*, IV, 4.

CONCLUSION

1.

Ockham: Metaphysics and Science

Ockham's inquiries into nature are primary displays of that mental temper which seeks to understand and explain the process of physical events only in terms of the observable behavior of identifiable bodies. His investigations, throughout, are characterized by the belief that the intelligible processes of the physical universe are functions of the individual being of spatio-temporal located substances whose states of activity (i. e., "motions") totally exhaust the natural universe and provide the foundations upon which to erect a science of nature.

The science of things-that-are, however, is not the science of being-as-such. The latter, arriving at no conclusions such as can be distinguished from principles, is a non-demonstrative science — the science of first principles as such. Metaphysic, in the last analysis, is a kind of wisdom: an act of intelligence by which "being" is grasped through the attributes which belong to it in an *un*qualified sense. In contrast to the metaphysician, the natural scientist has as his object being, *qua changeable:* beings grasped insofar as they are thus or thus determinable as a "such." To regard being-as-such, as well as being-*qua*-changeable, as a function, or synthesis, of matter and form, would be to mark no difference between physics and metaphysics. As such, both sciences would reduce to but one: a "science" which attempts to account for the determinate being of things-that-are by reference to absolute principles distinct from and/or prior to them.

Thus, for Ockham, individual substances *qua* qualified — as apprehended in sense experience — provide the principles for a science of nature. Not substances *per se* — for substance is never experienced apart from its qualitative variations and determinations; nor qualities *per se* — for the contraries, although capable of consideration in abstraction from the substances which they are said to qualify, do not naturally exist *per se*, but are forms of being which exist *per aliud* — i. e., as *determinations* of individual substances. To ignore this distinction would be to erase the line, carefully preserved by Ockham, between the categories of substance and quality, by making all *qualities* subdivisions of *substance.*

Now Ockham, as we have seen, is perfectly willing to admit qualities (i. e., those which are grasped by our five senses) as *res absolutae.* Hence, Ockham treats qualities of this type as absolute forms distinct from

material substances, which "inhere" in substances. As against the "absolutist", however, he denies that these absolute qualities *are entities of universal character*, and insists that they are particular, or singular things — so that if a certain body is white, it is because a certain particular whiteness (what one might call an "instance" of whiteness) inheres in it. In this respect, the question now arises as to why Ockham, who vigorously opposes the absolutist doctrine with regard to all *other* categories, is willing to admit the sensible qualities as real entities distinct from substances.

One possible and cogent answer is that he is forced to make this concession by reason of the Catholic dogma of the Eucharist, according to which the accidents of bread are believed to remain in existence when the substance of the bread is destroyed. It appears to us, however, that there is a more philosophical reason for Ockham's position: for if we should attempt to reduce the sensible qualities to something else, and to eliminate them as primary and "absolute" objects of direct cognition, we would be cutting the ground of empiricism from under us — if, that is, all our knowledge arises from sense perception, and if all sense perception is of qualities (as is admitted by all), then unless these qualities are real and irreducible entities, *we would have to admit that we do not experience the real, through our senses.* So in the case of the sensible qualities, like "whiteness," "heat," etc., Ockham readily admits their separateness as real entities which really "inhere" in substances. But in the case of quantity, relation and all other categories, he denies any such separate reality, or any theory of "inherence" in substances, insisting that these categories signify nothing other than substances and/or qualities, to which they are reducible by analysis or definition.

To hold, however, that the primary subject matter of physics consists in individual determinate substances, must not be misconstrued as an affirmation that *only* the material exists. Ockham is not blind to the existence in experience of such things as patterns, functions and relations of material structures and systems of such structures. He will, however, flatly reject any possibility that such patterns, functions, and relations are *themselves* active in either their *own* actualization, or in the actualization of *anything else* in the natural order. Ockham's conception of natural process, as we have seen, leaves no room for the agency of "occult" forces.

For Ockham, there is no question but that the plurality and variety of existential modes displayed in the primary subject matter are entirely real and irreducible components of the actual world we inhabit — *not*

symbolic and "inferior" concretions, or embodied "reflections" of some more homogeneous, more perfect, supra-sensible substance. The experienced orders and connections obtaining in the natural realm are *contingent* relations — *not* material exemplifications of a pre — determined and unified pattern of logically necessary dependencies.

In sum, the world which Ockham envisions as providing the raw material for the physicist's inquiries is characterized by modal plurality and real contingency. Despite the eminent "logiscibility" of its orders and connections, it is a realm which yet defies the prior statement of any metaphysical principle from which these, and other (yet unnoted) orders and connections can be derived by deductive means.

Ockham's metaphysic does not provide a "basis" for his natural philosophy in the sense that it proffers a set of substantive principles serving to "save", in ultimate terms, the minutiae and flux of physical occasions. The principles affirmed are offered neither as props, nor alternates, for the specific findings accessible to the physical investigator. Science, indeed, can get along quite nicely *without* metaphysic, while it is hardly possible for the reverse to be true. Nor can Ockham's general view of nature be regarded as the result of some highly esoteric form of knowing. He draws no line between the inductive procedures of common-sense and physics on the one hand, and those of metaphysic on the other. The general account of things which he endorses, appears to us as the broadest possible extracts from knowledge gleaned in the course of everyday traffic with the finite beings in which the natural realm consists. Although such a metaphysic is necessarily sparse in content, it nonetheless proves an effective guide for Ockham's inquiries into nature: for it provides the philosophic substance out of which to formulate two regulative questions to which, as we have seen, he will submit all physical descriptions, laws and hypotheses: *what do the terms that we use in these physical explanations actually mean? How can we be assured of the truth of that which is asserted in these terms?* In the final analysis, Ockham's two questions will allow as *meaningful* only those assertions "reducible" to statements whose elements designate observable entities, and as *true* only those which are satisfied by an existing state of affairs.

Ockham's metaphysic, in short, appears to us to function chiefly as an instrument of criticism in determining the relevance of scientific statements to their subject matter, such that the elements of these statements must be definable in terms of observable entities, and the truth of such statements must be determinable by experience or ob-

servation of perceptible matters of fact. To this extent Ockham's metaphysic is a critical validation of the principle of empiricism in physical science.

2.

The Mechanics of Ockham's Approach

Analysis of meaning is pursued by definition. Not every term, however, employed in common or specialized discourse requires elaborate treatment to insure precision of communication. Ultimately, this is guaranteed by the utter primacy of the subject-matter of physics. For when the terms comprising a proposition purporting to convey information about natural entities and occasions are *absolutely significative* — i. e., direct "personal supposits" for existents-by-nature (concrete absolute terms), or for observable properties of such existents (abstract absolute terms) — attempted refinements of language and probings for more precise delimitations are entirely gratuitous. Such absolute terms comprise, for Ockham, the concrete terms in the category of substance, such as "body," "tree," "animal," etc., and the abstract terms in the category of quality, such as signify perceptible qualities directly apprehended by the five senses. These items of direct experience such as are signified by absolute terms are grasped directly by a single, indivisible, "intention" of the mind. The concept, that is, is a natural sign of what it means, or of the things it can denote; and its terminological counterpart (written or spoken) — although "inferior" in that *it* is arbitrarily instituted — is yet as simple and direct a marker for things-that-are as is the concept which denotes these beings.

But not all terms signify, thus simply, "absolute" components in experience; and such perplexities as do arise to baffle inquiry invariably occur on the level of higher-order constructs couched in *connotative terms*. All terms of first intention that signify a determinate being (such as can be signified by an absolute term) by consignification of something distinct from and contingently related to that being, or by *con*signifying some determinate feature of that being considered in abstraction from it, are connotative. These terms then, are not "mere" linguistic artifices or "pure" fictions. Connotative terms *secondarily* "consignify" some perceptible, contingent state, relation, or determinate part of individual existents considered in abstraction from these existents, but they signify *primarily* individual substances or particular qualities to which these states, relations or parts are attributable. Proper "reduction," therefore, displays all connotative terms as functions of

absolute terms. Ockham's approach will nowhere admit the possibility of a definitional *regressus ad infinitum*. A series of definitional steps may be long, but it will terminate with definientia which are symbols for irreducible, real, constituents of a realm *outside* the universe *of* discourse — items of direct observation. Ockham's "reductive" analysis, then, enables the inquirer to determine whether a given term, in the way it is employed, has empirical — i. e., "factual" reference. Ockham's rejection of motion, time and place hypostatized, rests ultimately on the ground that the world being as it is, and the nature of our experience being what *it* is, no possible observational procedure can ever be specified to verify the existence of "absolute" motion, time or place.

Now a very important feature of Ockham's "reductionism" is the fact that most of the terms or expressions, when reduced to formulations containing no nouns other than those which signify substances or qualities, *involve verbs in the reductive expressions*. For example: in reducing the connatative term "motion" to the expression "*mobile quod movetur*", the verb "*movetur*" appears. Being a verb, it does not denote any *thing* other than the subject ("*mobile*") to which it is joined; yet it is the most essential part of the reductive expression because it *expresses the action connoted by the term "motion,"* and it alone expresses the difference between the conditions of motion and rest, either of which can equally well determine a *mobile*. So, although Ockham insists that motion is not any other *thing* than a body, or *mobile*, he does not reduce the meaning of "motion" to the mere meaning of "mobile body" — rather he shows that the word "motion" denotes a body *as involved in an action*. The action is not another *thing* distinct from the body; it is precisely *the body itself in its actual existence at that time*.

The importance of this cannot be over-emphasised because a criticism of Ockham's "reductionism" — *improperly understood* — would be that Ockham's techniques eliminates the dynamic connections and relations characterizing the actual world, by reducing the terms which express such relations to discrete sets of nouns, thereby "atomizing" the world. Actually, Ockham's method of reduction *does just the opposite of this* — for it keeps us from falling into the habit of construing terms (like the term "motion") as simple names of entities, and shows us that these terms are merely shorthand *for expressions involving verbs* — for expressions which are, to use more modern terminology, propositional functions such as can find application to reality only when given values which make them into propositions. Thus, to the "absolutist" who would be inclined to argue that "because body B is moved, therefore

there must be an entity called 'motion' which is acquired by body B," Ockham would reply as follows: "The term 'motion' is equivalent to the expression 'for something to be moved,' which is a propositional function determining the class of propositions 'B is moved,' 'C is moved,' 'D is moved,' etc." For Ockham, as we have seen, to say that "B is moved because B acquires a motion," is simply to say that "B is moved because B is moved." The absolutists, that is, seem to have taken the abstract term, which is (for Ockham) no more than a shorthand name for a certain kind of fact, or event, and then claimed to *explain* the event by using this name of the event as if it were its *cause*. Thus, the typical "absolutist" could be thought of as saying that the reason heavy bodies fall downward is because they have "gravity" — which, for Ockham, would be too ridiculous an "explanation," since "gravity" is nothing but a noun coined from the expression "for a body to fall downward." The point to keep in mind, is that Ockham *nowhere* tries to reduce the world to a static collection of "things" — i. e., of substances and qualities; what he aims to do is to reduce that abstract language, which is used *as if* it denoted a lot of abstract "things," to a concrete language which expresses not only the directly observable "things" involved in actual events, but which expresses (by means of verbs) the events, or actions, *of* these things.[96]

3.

Ockham: The Philosophy of External Relations

The fundamental philosophical error in the absolutists physical scheme, then, appears to lie in his failure to realize that the constructs of natural science, however unassailable within the limits of their own relevance, cease to have any meaningful status when pressed into service *beyond* those limits. It appears to be Ockham's position, that so long as natural science is content to restrict itself to statements which can be

[96] Ockham, it will have been noted, refuses to reduce *verbs to nouns*. Thus, he refuses to agree with the common practice of the "absolute" theorists, of supposing that propositions have designata over and above the designata of their terms. A further important point is of a similar character. He refuses to recognize relations as entities, or as entities distinct from or added to, their relata. A relation, for Ockham, is a *relating* — altogether similar to a proposition or statement; or, possibly, Ockham *might* have acknowledged that relations are "facts", the actual occurrences stated by propositions, while vehemently denying that we can treat such facts as *things*. One has the feeling that Ockham would certainly grant that what is expressed by a proposition, or by a verb, *is* "real" — indeed, the only actuality; but such actuality is not a "thing" such as can be designated by a noun, or such as could be signified by the subject term in another proposition.

confirmed or rejected by appeal to the primary subject matter, it retains its autonomy and acts as its own regulator; but as soon as it attempts to transcend experience, and take flight in speculative "explanations" involving disembodied "forces" as causal factors, it must be prepared to pass through the discipline of philosophy whereby it may be enabled, by criticizing its own foundations, to discover just *what* — if, indeed, any at all — may be the relevance of its knowledge to metaphysical knowledge.

Now to hold, as the absolutists appear to have done, that the categories of Aristotle represent *divisions of being*, rather than, as Ockham feels, ways in which things-that-are may be *said to be*, antecedently disqualifies the possibility of making any *non*-metaphysical statements — i. e., any statements of a factual contingent character — so that the absolutist is completely incapable of distinguishing between *things* and *facts*. The absolutist has but one basic verbal copula, namely the verb "participates," or its inverse "inheres", and whatever predicate he asserts of a subject, is, in effect, a *definition*, or an *analysis of the internal constitution of the subject. All relations, that is, for the absolutist, are internal relations*. To insist, for example, that this-triangular-body-moved-in-time is *triangular* owing to the "inherence" in it of *triangularity: moved* insofar as it "partakes" of *motion:* and *temporal* because "informed" by *time:* is to argue the prior, distinct and absolute existence of *triangularity, motion* and *time*. This is to reduce the primary subject *of* the "triangularity," "motion," and "time," to a fundamentally *indeterminate* "something" known only insofar as it *connotes* forms or causes prior to it. Under the terms of the "absolute" scheme, science can have only one legitimate object: *forms* unobservable in their universality, indeterminate with respect to individuality, and ontologically prior to things-that-are. This is not to say that there is *nothing* in the empirical world; it is, however, to insist that empirical inquiry can yield no knowledge of the *real* nature of that world inasmuch as sensible experience now serves only as the *occasion* upon which the mind can grasp at its *true* object: separated forms, ideas, essences or exemplars

If this "absolute" doctrine, apparently (as we have sketched it) a variety of augustinianism, is true, then all of Ockham's efforts were spent in vain. For Ockham, as we have seen, persists in the belief that the scientist does, in fact, deal with statements whose elements are demonstrably those reducible to what is observable — i. e., individual bodies and their qualities. If, however, knowledge of the *real* is precluded by the belief that we apprehend only "occasional" manifestations of what is *truly* real, then Ockham's attempt to exhibit the unillumined

human intelligence as adequate to the task of constructing sciences about things-that-are reduces to the most jejune of mental exercises.

Now our "absolutists" so far as we can determine, have nowhere denied the actual existence of physical objects independent of their "information" by absolutes, which latter, they feel, provide the only key to understanding the true nature of physical reality; they merely affirm the belief that since such physical objects *are* unknowable *apart* from their qualifications by these absolute beings, it is a prodigious waste of time to even consider these physical objects *at all*. The view that Ockham is urging, on the other hand, is that not only is it impossible to explain all our experience of the external world unless there exist physical objects apprehended, understood, and signified as qualified individual absolutes, but that we *do* have knowledge of their character.

Ockham's inquiries make it sufficiently clear that any confusion between what is the "occasion" of intellectual knowledge on the one hand, and what is the "real" object of knowledge on the other, is due to a persistent failure to recognize that these are not mutually exclusive categories for any physical situation as a whole: on the contrary, the experienced things which are the occasions of our knowledge, *are* the real objects known.

Thus, "Occasions" or "finite concretions of the real" in the perceptual realm are merely contradictions in terms. The "round" physical object which one perceives in experience, is not a provisional occasion for the illumination of the mind by the essence "roundness;" it is, indeed, not the appearance of anything at all other than itself — i. e., a body whose outer parts are equidistant from its central part. The fact that we can mentally abstract, and consider in isolation — as if separable — "roundness" or "triangularity" or "squareness" from our experience of concrete objects, is no proof that there *is* an exemplary "roundness" or "triangularity" which is the true object of scientific knowledge, anymore than our ability to deal in abstract numbers gives us the philosophical right to regard the realm of nature as nothing but a system of relations embodying principles of mathematical synthesis as such. In other words, all perceptual objects are what they are, and are not "mere" occasions, or appearances, of something else which is "really" different.

As we have seen, the whole force of Ockham's philosophy of science, is directed against those who expound this "doctrine of internal relations;" those, that is, who would affirm that every conceptual structure devised by the human intellect for dealing with things experienced, has a "real" counterpart "in" the things experienced. This is the doctrine

of the augustinians and of Duns Scotus *("ordo rerum idem est quod ordo idearum")* — it is this doctrine which Ockham fights, tooth and nail, in all his works. Ockham's whole contention is that language and reality are not isomorphic, that logic and physics are not parallel to each other, and that the concepts by which we signify things are not "parts" of the things we signify by them, nor even signs of "real parts" in these things. Duns Scotus, by way of contrast, insists that to every concept applicable to a thing there corresponds a *"realitas"* in the thing. So if Socrates is in Athens, Duns would claim that there is a *reality* called "being-in-Athens" which enters into the ontological composition of Socrates when he arrives there, and that Socrates *is*, to this extent, an instance of the entity which is "to-be-in-Athens". Ockham, in sharp distinction, tells us that "to-be-in-Athens" is not an entity or a thing — it is, indeed, nothing other than Socrates (in this case), and Athens, and far from Athens being *in* Socrates it is Socrates who is *in* Athens — not "in" in the sense of inherence, but in the ordinary sense of being surrounded by the parts of the city. The *fact* that Socrates is in Athens, Ockham would hold, is not an entity inhering in Socrates, or in anything else; it is simply the actuality of Socrates at the time he is in Athens, and it is not to be signified by a noun, but affirmed as a statement. The same holds for the term "motion," which, for Ockham, does not signify anything distinct from the body moved and the place through which it is moved — there are only two things, the body and the place, and the *fact* that the body is moved through that place is not a third "thing", *but it is the state of affairs which is the body moving through that place, expressed by the statement:* "body B is moved through place C," *but not denotable by a noun, because it is not a thing, but a happening.* In short, whereas Duns Scotus and the absolutists generally, would reduce propositions to terms, and construe true statements *about* things as equivalent to *partial definitions of the things*, Ockham operates with just two kinds of "absolute" terms, and preserves a sharp distinction between *definitions of things on the one hand*, and *statements of contingent fact about those things, on the other.* If all the facts in which a thing were involved, were parts of the being of that thing, each and every thing would *be* an infinite number of partial things, and nothing could be defined determinately, and this as we have seen, would be ruled out by Ockham as totally destructive of the possibility of any science. Ockham's philosophy is a philosophy of *external* relations, with "things" defined independently of their histories, the latter being thereby contingent and non-necessitated. It is only in this way that we can know *something*

without knowing *everything*. Philosophies of internal relations, by contrast, commit us to the position *that we cannot have full knowledge of anything without having knowledge of everything.*

It would seem, then, to be to the credit of our "absolute" theorists that in directing thought to the epistemic function of the object which they feel "occasions" knowledge, they appear to be responsible for recognizing the futility of inquiring what that object is *really* like, *per se*. It provides, that is, a backdrop against which the full significance of Ockham's insistence on that alone as *real*, which has real and observable effects, comes into focus. Physical objects, for Ockham, are real insofar as they react on other physical objects, and *science can give us knowledge of them insofar as it reveals the nature of these effects*

4.

The Elimination of Abstract Entities

Let us attempt now to understand Ockham's handling of the rôle of scientific abstractions, and of the problem of preserving their reducibility to empirically determined facts, in the specific area of his discussion of motion, time and place. In Ockham's discussion of local motion (as of efficient causality, in general), his main theme is that of destroying the contention of the absolutists that motion, or efficient causality, involves any abstract entities distinct from substances and/or (sensible) qualities. The absolutists claim that when one body pushes another body in local motion, the agent body generates a form which then inheres in the moved body, and which immediately moves it. Ockham denies any such inhering form in the case of local motion, arguing that local motion does not involve the production of any new entity, but consists solely in the *fact* that the mobile body is continuously in successive places (or successive parts of the medium). He argues further, that the moving agent, or the body which pushes the patient body, is the sole and immediate cause of the movement, merely by the fact that it is itself in motion; so that no new entity is produced in the process. In the case of alterative motion, however, Ockham concedes that the agent generates the acquired quality in the patient, so that in the instance of alterative motion something new *is* produced. This is, of course, in consonance with his own doctrine that qualities are real (particular) entities. In the case of augmentative motion, on the other hand, Ockham admits *no* new production, or new entity, and analyzes augmentation in terms of the local motion of the parts of the augmented body. The

main burden of his whole discussion is that of disposing of fictive entities such as "motion" supposedly acquired by the moved body, or such as the "quantity" supposedly acquired by the augmented body — and his arguments illustrate concretely his technique for reducing scientific abstractions to elements of experience.

Now Ockham defines motion as *"mobile quod movetur"* so that there is involved the existence of immediate places through which the body moves. The problem of "motion", therefore (i. e., local motion), involves the concept of place and that of time. Since Ockham's definition of local motion involves the concept of "place" as that to which the moved body has successively different relations, the problem naturally arises as to what "place" is. Now the absolutists (much like the later Newtonians), conceived place as a reality distinct from bodies, a pure dimensionality in which bodies are found, and through which bodies move, but which is itself immaterial and unmoved. Ockham, on the contrary, stuck rigidly to Aristotle's definition, whereby the "place" of a thing is that body which surrounds it and whose inner parts touch the thing said to be in place. Ockham rejects the theory that the place of a thing is the "space" (or pure dimensionality) of the surrounding body, because no such immaterial space or dimensionality exists. So he has to concede that any place, being *itself* a body, is movable. In consequence, Ockham's definition of local motion turns out to be a purely relativistic one — all we can say, is that a body, B, is moved relatively to the surrounding body (or medium), and it is always possible (or even certain) that this surrounding body is itself moved in relation to the body which surrounds it, and so on out to the outermost sphere which has no place and cannot, therefore, be said either to be moved or to be at rest. Throughout the middle ages there was controversy about the outer sphere, or about the "place of the world," some holding that the outer sphere, being a body, must be capable of being moved as a whole in a rectilinear manner; but to make this intelligible, they had to assume something through which it would thus be moved. Consequently, they assumed an infinite immaterial "space" outside the world, in relation to which the world could be moved, and in relation to which it could be said to remain at rest. Ockham, as we have seen, will have none of this: assuming that there is no corporeal body outside the outer sphere, them, it is *meaningless* to say that the world is in motion or at rest. That is, Ockham denies "absolute motion" as a consequence of denying "absolute space."

Since, however, the physicist is concerned to treat of all bodies in their movements, as a connected system, he has to choose a common

standard frame of reference for his descriptions of the movements of bodies. And since the outermost (and largest) body is the "place" of all the inner bodies, it conveniently serves as our spatial frame of reference. Hence, Ockham treats it as *the* body at rest (i. e., the body not displaced as a whole, though it may rotate), and he treats the internal dimensions of the sphere as a constant stable "theatre" in which all movements of inferior bodies occur. It is convenient to describe the motions of inferior bodies as movements through this dimensionality of "space" contained by the outer sphere, as if a projective traversed so much pure *distance*, instead of traversing so much corporeal air. Ockham certainly grants this convenience, and the legitimacy, for *science*, of using this fictive "space" as a frame of reference for the description of motions. But he constantly warns against the danger of transforming this conceptual instrument of measurement into an immaterial reality supposedly underlying the realm of corporeal bodies. For this would be to hypostatize, into a metaphysical concept, a purely logical construction; an error of the same order as that of hypostatizing the numbers by which we count things, into eternal objects supposedly inhering in the things counted.

Ockham treats of time in an entirely similar manner. Time, for Ockham, is the measure of motion with respect to a before and after. Since motion, however, is nothing other than a body moved, time is a measure of *body*, or it is body *qua* measured with respect to before and after. Once again Ockham eliminates abstract entities. Although, however, the time of a particular motion (or body *qua* moved) may be said to be nothing other than the body itself in its successive positions, we cannot *measure* this time except by making comparison with some other body in motion (or some other *time*) — in which case we have a timed time, and a timing time. This presents a dilemma: which time shall we choose to be the timing time, and which one the timed time? So we select, with Ockham, *one* body in motion (i. e., in motion relative to all other bodies) as the standard timing time — i. e., as a universal clock. The rotation (relative to the earth) of the sphere of the fixed stars is chosen, because it makes the best and most useful clock; the most useful, because its circular path is geometrically regular, and being larger than any other path, it is more easily divided into small segments (minutes and seconds). We then synchronize mechanical clocks with the sidereal clock, and say that these clocks measure "the flow of time." This, so far as Ockham is concerned, is fine for convenience of speech and of measurement; but, he warns, let us not be led into thinking that

there is some even-flowing immaterial entity called "Time", which is measured by our sidereal clock. On the contrary, for Ockham, the sidereal clock *is* time, for it is itself the unmeasured measure of all measurable times. Thus, if one, as a metaphysician, were to ask what time, place and motion *are*, Ockham would suffer but one answer — they are all movable bodies, tangible observable things in our experience, given privileged functions in our calculations and measurements. For convenience, it is quite allright to talk about time and space *as if* they were immaterial absolutes to which movements of bodies are referred; but when we track them down, in their actual *use*, we find that they are bodies, like other bodies, to which *we* have given privileged functions for the measurement of the movements of other bodies.

So the examination of specically physical concepts, undertaken by Ockham, results in the conclusion that there is no necessity of positing unobservable and immaterial "abstract" entities, in order to account for the possibility of our stating general truths of a scientific order about the observable things of our experience. We can generalize, abstract, construct, and formulate laws and equations, in our empirical sciences, without having to posit or invoke unobservable entities or "metaphysical figments". The only part of science that is not contributed by the observable things of experience, is the part which we ourselves contribute by way of inventing terms with which to signify the things we observe, and by constructing conceptual schema, arguments, and other linguistic instruments for the statement of general truths about the things of our experience. The science of physics, itself, *is* a logical structure — but it is not *about* logical structures, but about the things and events given to us in experience.

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THE PREREFORMATION GERMAN KIRCHENLIED AND CONGREGATIONAL SINGING*

The roots of the German *Kirchenlied* lie deep in the Latin liturgy.[1] Already before the time of Charlemagne the German *"Chirleis,"* or simply *"Leis,"* had become a practice.

In his article on congregational singing, Dr. R. Boisvert recalls how St. Gregory in medieval times, and Pius XI in modern times *("Divini Cultus Sanctitatem")* mentioned the early custom of the alternation of the Kyrie between the clergy and the people.[2] In Germany the people added also a vernacular appendage to the Latin Kyrie. Yet it was not restricted only to Germany, but appeared also in France as the *"Kyriole"* or *"Quirielle"* and even as *"Lais,"* distinct from the lais which were the translations of Latin sequences. In Bohemia the same genre appeared as *"Krles."*[3] Nor was this type of vernacular appendage to the *"Kyrie Eleison"* to be restricted in later times to the Catholic Church. There are also Protestant chorales that belong to the same general species, such as *"Nun bitten wir den heiligen Geist"* and *"Christ ist erstanden."*[4] Moreover, in the *"Geistliche Lieder mit einer neuen Vorrede D. Mart. Luthers,"* printed in Leipzig in 1545, we find some excellent examples of an evolved type of *Leis*, remnants of the older and much shorter genre.[5] For example, the *"Lobgesang: Gott sei gelobet und gebenedeiet"* has after each verse: *"Kyrieleison."*[6] The same is the case for the *"Lobgesang auf das Osterfest: Jesus Christus unser Heiland"*;[7] the *"Zehn Gebote Gottes: Dies sind die heilgen zehn Gebote,"*[8] and the *"Lobgesang:*

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* Based on the M. A. thesis: *The Position of Martin Luther in XVI Century Evangelical Church Music, by the author*, (Catholic University, May 1955, Wash. D. C.).

[1] *Kirchenlied, katholisches deutsches*, in *Lexikon für Theologie und Kirche*, V, p. 1009.

[2] R. Boisvert, *Congregational Singing* in the *Catholic Choirmaster*, Vol. XXIII, No. 2 (June 30, 1937), 56 ff.

[3] Ursprung, *Die Katholische Kirchenmusik*, in *Handbuch der Musikwissenschaft*, ed. Bücken, VIII, 99.

[4] Wili Apel, *Harvard Dictionary of Music*, p. 396.

[5] Luther, *Gesammelte Werke*, ed. Frankfurt (1853), LVI, p. 306.

[6] Ibid., p. 317.

[7] Ibid., p. 319.

[8] Ibid., p. 322.

Nun bitten wir den heiligen Geist."[9] From the earliest *Leisen* such as the *"Unsar trohtin,"* the *"Christ uns genade, Kyrie eleison, und die heilige alle helfen uns"* grew the German *Kirchenlied* proper, to become the proud musical heritage of all times.[10]

The oldest known *Chirleis* is the famous *Freisinger Petruslied:*

Unsar trohtin hat farsalt
sancte petre giuualt
Daz er mac ginerjan
ze imo dingenten man.
Kyrie eleison
Christe eleison.[11]

This dates from the ninth century or tenth,[12] and is probably the oldest *Leis* we have preserved documentarily with words and neums above them.[13] Yet, many other *Leisen* antedate this particular one, though we do not have the actual songs, themselves.[13a] Other historical documentation must also be given to complete the picture. And thus we see the Synod of Salzburg in 799, admonishing the people to sing their *Kyrieleisons* better than heretofore. It is not a question of only the word, itself, in Greek, since there was a lively discussion among those who wanted singing only in the biblical languages. As a flowering of the Litany of All Saints (rather than the Kyrie of the Mass) this acclamatory genre had a definite place in the liturgy.[14]

An example of a French *Quirielle* that did not derive from the Litany of all Saints but was used either at the Kyrie of the Mass or at the Offertory at Christmas:

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[9] Ibid., p. 337.

[10] Besseler, *Die Musik des Mittelalters und der Renaissance*, in *Handbuch der Musikwissenschaften*, ed. Bücken, II, 104. Aus derartigen Leisen entstand im Zeitalter der Staufenkaiser das deutsche Kirchenlied, dessen Melodienfülle zum kostbarsten nationalen Vermächtnis des Mittelalters gehört.

[11] Karl Weinman, *History of Church Music*, p. 52.

[12] Reese, *Music in the Middle Ages*, p. 231.

[13] Ursprung, *op. cit.*, p. 99. A plate photographed from the original (21).

[13a] Heydt, J. D. von der, *Die Geschichte der Evangelischen Kirchenmusik in Deutschland*, (Trowitsch & Sohn, Berlin, 1932) p. 21. Daß sie (Kirleisen) auch viel gesungen wurden, wird durch viele Zeugnisse bestätigt. In einer Deutsch-Ordens-Chronik in Danzig wird eine Prozession mit folgendem Verse anschaulich geschildert:

Di pfaffin suze sungin
di glockin lute klungin
de leigin (Laien) ire leise
sungin die wegereise.

Am Schluß seiner Predigt forderte wohl der Mönch oder Priester die Gemeinde auf, einen Leis oder Ruf anzustimmen.

[14] Ursprung, *op. cit.*, p. 98.

Adorons dans cette crêche
Sa profonde humilité
Noël, Noël, Noël!
C'est de la qu'il nous la prêche
Rédisons-lui: Kyrie!
Kyrie eleison, etc.[15]

There is also an interesting *Kyrieleison* to be sung after the elevation in the Middle Ages: *"Wir wollen alle singen, wir wollen fröhlich sein; Wir haben mit unseren Augen den wahren Gott gesehen. Kyrieleison."*[16]

The *"Christus uns gnade"* is a later linguistic form of the original *"Christe kinado, Kyrie eleison, unde die heiligèn alle helfant uns, Kyrie eleison."* This was sung by the laity (nobility in this case) on the occasion of the installation of Bishop Diethmar in Prague, 973.[17] It is interesting to note the melodic similarity between the ancient melody of the *"Nu bitten wir den heiligen Geist"*[18] and the chorale as found in Bach.[19]

The similarity here amounts to identity. Indeed the periodization of the strophes is the same as is also the melody barring accidental differences of passing notes and variations from the original melody. The text of Luther is identical with the old German, except for the modernization of the spelling of the German words of the chorale. Naturally, the metric disposition of the piece had been put into typical Bach. There are many more ancient melodies that could be thus compared, but it is not the purpose of this particular study to do so.

Compositions in the *Althochdeutsch* of the *Petruslied* gradually gave way to the *Mittelhochdeutsch* of the following period as well as to the increased interest and use of the Latin poem. However, in the twelfth century especially began the wholesale translation of Latin hymns into German by the industry of monks and clerics. In addition came many translations of the sequence, and it is here that we must look for the *Leich*, or *Lais* in French. The *Leich* and *Leise* are often confused, but that is easily understandable in the case of the *"Nu bitten wir den heilgen Geist" (Leis)* as a good example. This is an outgrowth of the Pentecost sequence: *"Veni Sancte Spiritus . . .*[20]

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[15] Gastoué, L'Église et la Musique, p. 147, 149.
[16] Albanus Schachleiter, O. S. B., Vom katholischen deutschen Kirchenlied, in *Der Katholik* (Zeitschrift für katholische Wissenschaft und kirchliches Leben) ed. Heinrich & Moufang. (Jahrgang LXIV, Mainz, Kirchheim, 1884, zweite Hälfte), p. 56, footnote 2, quoting Bäumker.
[17] Ursprung, *op. cit.*, pp. 98—99.
[18] Besseler, *op. cit.*, p. 104.
[19] J. S. Bach, *Four Part Chorales*, ed. Kalmus, I. 20.
[20] *Katholisches deutsches Kirchenlied*, in *Lexikon für Theologie und Kirche*, V, 1009.

One of the earliest examples of this sort of thing is the Swiss *Leich* "*Ave vil liehter meres sterne*" from the sequence "*Ave praeclara maris stella.*"[21]

The period of the crusades and especially the twelfth century saw the rich unfolding of new melodic *Lieder* both in the church and in secular music. The exact distinction between secular and religious music at this time is not always so strict as some would have us believe. There was a mutual influence of one upon the other. Thus we see the *Lais* or *Leich* grow from the sequence of the Mass, and retain the essential form of the latter.[22] And in turn some of the songs composed by the minnesingers were used in church, as for example the Lied: "*Oberestiu Magenchraft*" which bears the annotation: "*Gesang zur Messe,*" and was probably meant to be sung during the celebration of the Mass. Besides this there must have been countless others of the same type, that because of their simplicity and content were felt suitable for divine service.[23]

But for the *Kirchenlied* proper, we look principally to the thirteenth century, though some of the hymns now attributed to this century may well have been of earlier origin.[24] An early example of processional hymns would be the "*In gotes namen varen wir,*" written in *Mittelhochdeutsch.* Berthold von Regensburg, the famous Franciscan preacher mentions the above cited "*Nu bitten wir den heiligen Geist*" in one of his sermons, as also the fact that the people answered the *Credo* with "*Ich glaube an den Vater, ich glaube and den sun miner Frouven sant Marien und an den heiligen geist, kyrieleys.*" He likewise encouraged this practice in his sermon. The Franciscan Order originated in the early thirteenth century and was greatly responsible for the upsurge of new hymns both Latin and German.[25] There were hundreds of Office hymns and

[21] Ursprung, *op. cit.*, p. 100. Das früheste bekannte, noch dem 12. Jahrhundert angehörige Beispiel ist der vielleicht in der Schweiz entstandene Leis "Ave vil liehter meres sterne" der Sequenz Ave praeclara maris stella folgend und schon in dem ältesten deutschen Gebetbuch verzeichnet, das aus dem schweizerischen Kloster Muri stammt . . .

Joseph Kehrein, *Lateinische Sequenzen des Mittelalters* (Mainz, Kupferberg, 1873), p. 196. The full text of the Latin sequence for the feast of the Assumption and the Purification, composed either by Hermannus Contractus or by Heinrichus Monachus.

[22] Wili Apel, *op. cit.*, p. 392.

[23] Reese, *op. cit.*, p. 232 ff.

[24] *Ibid.* Weinman, *op. cit.*, p. 53. *Kirchenlexikon*, V, 1009.

[25] Besseler, *op. cit.*, p. 113. Unter Führung der neuen Orden des 13. Jahrhunderts, vor allem der Franziskaner, wurde der Stundengottesdienst einheitlicher geformt und durch Hunderte von Reimoffizien auf beliebte Heiligen- oder Gedenkfeste bereichert. Strophsequenzen, Hymnen, deutsche und neuerdings auch italienische geistliche Lieder entstanden in großer Zahl, und schließlich geht die kirchenmusikalische Organisation des Laientums, von den Konstablern, Kaland-, Fronleichnams-, Begräbnis- und

of these many were tranlated. The influence of Franciscanism in thirteenth century music has its counterpart in the history of the *"Croce Dipinta,"* of Italian-Byzantine painting,[26] and in religious drama and poetry,[27] a true artistic flowering of the spirit of St. Francis, the troubador of Assisi.[28]

The crusades, then, and the minnesingers with their *"geistliche Lieder"* continued the age-old *Kyrieleis* in native German. Among the minnesingers appear many famous names, from Spervogel, Herman Monachus of Salzburg, Heinrich Frauenlob, Walther von der Vogelweide. This tradition was continued to an extent by the Meistersingers Henrich Mueglin, Muelich von Prague, Michael Benhaim, and into the Lutheran Church with Hans Sachs particularly. Besides these, however, countless other sources provided German *Kirchenlieder.*[29]

From the thirteenth century stems the hymn that for a time was used in the Lutheran church: *"Uns kommt ein Schiff fahren."*[30] From the fourteenth century the Christmas hymn: *"Lovet sist du ihu Christ,"* and the Christmas hymn *"Syt willekommen heirre kirst"*[31] probably sung at the Christmas Midnight Mass by aldermen *("Schoeffen").*[32] This was doubtless a part of the Liturgical Drama for Christmas,[33] just as the Lied *"Christ ist erstanden"* belonged to the beautiful liturgical drama of the *"Quem quaeritis"* in Germany.[34]

Besides these hymns were the sermon hymns in use already in the twelfth century, the: *"Komm Heilger Geist," "Christ fuor gen Himmel"* and others.[35]

In addition to the *Kyrieleis*, there also arose a two-line acclamation, probably originating also from the Litany of All Saints, with a conclusion that was evidently a substitute for the *Kyrieleis: "Das helfe uns der*

sonstigen Bruderschaften bis zu den privaten Zirkeln italienischer Laudesi und ältester Meistersinger in ihren Anfängen ebenfalls auf das 13. Jahrhundert zurück.

[26] Van Marle, *The Development of the Italian School of Painting*, chap. vi, "The Franciscan Byzantine Influences."
Vavalà, *La Croce Dipinta Italiana, passim.*

[27] Rev. Lawrence G. Craddock, *Franciscan Influences on Early English Drama*, in Franciscan Studies, (December, 1950), p. 383 ff.

[28] P. H. Lang, *Music in Western Civilization*, p. 113.

[29] Blume, *Die Evangelische Kirchenmusik*, in *Handbuch der Musikwissenschaft*, IX, 11.

[30] *Ibid.*

[31] Ursprung, *op. cit.*, p. 101.

[32] *Lexikon für Theologie und Kirche*, V, 1009.

[33] Ursprung, *op.cit.*, p. 102.

[34] Reese, *Music in Middle Ages*, p. 194, and *Music in Renaissance*, p. 633.
Robert Haas, *Aufführungspraxis der Musik*, in *Handbuch der Musikwissenschaft*, IIb, 61. Here we have the music to the "Quem Quaeritis" and responses for the Easter liturgical drama.

[35] Weinman, *op. cit.*, p. 53.

Herre Christ," or: "*Gelobt sei Gott und Maria*", and also "*Alleluia.*" A typical example would be the acclamation: "*Sant Mari, mouter unde mait, al unsriu not si dir gekleit.*"[36] Already in the "*Christus ist erstanden*" variants the *Alleluia* as substitute for the Kyrieleis is to be found.[37] Bishop Henry of Basle and the whole army sang the "*Santi Mari*" before the battle of Marchfield in 1278,[38] and thus also the crusaders before the battle of Acre in 1191. This same acclamation was used by Frauenlob and lesser minnesingers, as also by the *Geissler* with amplifications and variations. It is interesting to compare the variant: "*Maria mouter reinu mait*" with the one used by the *Geissler:*

Maria mouter reinu mait,
Erbarm dich über die cristenhait,
Erbarm dich über diune kint,
di noch in diesem ellend sint.[39]

To this the *Geissler* added a second verse: "*Maria mouter gnade vol, du kanst und mahst uns ghelfen wol, Verlih uns ann gnedigen dot bhoett uns da vor aller not.*"[40] To this was also added a middle section, so that a three-part form arises: a b a.

In their form and also in melodic contour the *Geisslerlieder* anticipate the Lutheran chorale, which has its roots more or less in all the preceding types of the German *Geistliches Lied.*

The substituting of *Alleluia* for *Kyrieleis* can be seen also in some Lutheran chorales, such as the "*Christus lag in Todtesbanden*" which is a revised version ("*gebessert*") of the "*Christ ist erstanden*":

Christ lag in Todtesbanden
Für unser Sünd gegeben
Der ist wider erstanden
Uns hat uns bracht das Laben
Desz wir sollen fröhlich sein
Gott loben und dankbar sein
Und singen Halleluja,
Halleluja.[41]

Each verse ends with an "*Hallelujah.*" Similar are the hymns: "*Komm, Heiliger Geist, Herre Gott,*"[42] "*Gott der Vater wohnt bei uns*" ("*. . . So singen wir Hallelujah*"),[43] and others.

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[36] Ursprung, *op. cit.*, p. 102.
[37] Reese, *Music in the Renaissance*, p. 633.
[38] Weinman, *op. cit.*, p. 53.
[39] Ursprung, *op. cit.*, p. 103.
[40] Reese, *Music in the Middle Ages*, p. 239.
[41] Luther, *Gesammelte Werke*, LVI, 321.
[42] *Ibid.*, p. 330.
[43] *Ibid.*, p. 334.

The *"Es sungen drey Engel ein suessen gesang"* is another variant example of the two-line acclamation, found in a Rheinland songbook of the 17th century.[44] This is today proclaimed in the magnificent opening pages of Hindemith's symphonic arrangement of his opera: *"Mathis der Maler"*[45]

A fact worthy of noting is the presence of a major-minor tonality in the Geisslerlieder and in the acclamations just described. There was likewise a prevalence of binary rhythm. The *Geisslerlieder* present an tripartite form with *Stollen* and *Abgesang*.[46] The major-minor tonality is a contribution and musical principle of folk music. It is an indogermanic phenomenon, upon which the modality of church music was superimposed. Hence we see its presence particularly in the *Rufe* or acclamations in native German.[47]

The German hymns that arose in these prereformation times had the same purpose often enough as those which arose in the times of St. Hilary of Poitiers, of St. Ephrem: the education of the people. Thus we find Berthold of Regensburg, the famous Franciscan preacher of the thirteenth century, explaining the worth of doctrinal hymns:

> Mark these words (seven key words in apologetic doctrine) and keep them till death! I wish indeed that songs were sung about them. If there are any composers here able to sing new songs about them, let them take heed of these words exactly and make songs about them. And you will be doing well thereby. Make them short and easily understandable so that any child can learn them well. For thus can the people learn these words well and have less trouble remembering them.[48]

Berthold von Regensburg was the greatest popular preacher in Germany during the middle ages and realized the needs of the people as no

[44] Ursprung, *op. cit.*, p. 102.

[45] Hindemith, *Symphonie Mathis der Maler*, ed. Schott, p. 1 ff.

[46] Reese, *Music in the Middle Ages*, pp. 237, 238.

[47] Ursprung, *op. cit.*, p. 103.
Sach, Curt, *The Rise of Music in the Ancient World*, p. 304. Here Sachs strongly contests the claim of German musicologists about the indogermanic origin of tonality. It was a universal phenomenon, and actually Germany was late in accepting the major-minor tonality. The Orient also had it.

[48] Berthold von Regensburg, *Deutsche Predigten*, ed. Pfeiffer (Wien, 1862), p. 405 ff. (Seht daz wil ich iuch leren, den worten ir iuch iemer mere deste baz gehueten kunnet. Ir sult sie halt ouch an siben worten erkennen. Von swem unde svenne ir der siben worte einz erhoeret, vor dem sult ir iuch huten wan der ist ein rehter ketzer und ir sult den pfarrer an sie wissen oder ander gelerte liute.) Unde merket mir disiu wort gar eben und behaltet sie iemer mer unze an iuwern tot. Ich wolte halt gerne daz man lieder da von sunge. Ist iht guoter meister hie, daz sie niuwen sanc da von singen, die merken mir disiu siben wort gar eben unde machen lieder da von: da tuot ir gar wol an; unde machet sie kurze unde ringe unde daz sie kindegelich wol gelernen mugen; wan so gelernent sie die liute alle gemeine diu selben dinc unde vergezzent ir deste minner.

other did. His interest in music as a pedagogical means demonstrates his broad outlook and practical bent. From 1262 to 1263 he worked in Hungary where he denounced the excesses of the *Geissler*.[49] The *Geissler* are an interesting phenomenon in the history of penitential practices. They were also called Flagellants or *Kreuzbrüder (Flagellarii, flagellantes, Crucifери)*. However, the "*compagnie di laudesi*," the Italian counterpart and progenitor of the cisalpine *Geissler* were not originally only a Franciscan movement. They are fundamentally a lay organization of Perugian origin which finally became an erotic outgrowth of Franciscanism. It is incorrect to trace their origin back to St. Anthony of Padua's penitential sermons. But it is rather the outgrowth of political and social anarchy that reigned in Tuscany during the time of the wars of the Gwelphs and the Ghibellines (1260). The teachings of the visionary Giachino da Fiore and the terror of the pestilence of 1348 further heightened the fanaticism of the devotees of "*disciplina flagelli.*"[50] Despite their doctrinal and ascetical aberrations, however, they are important musically on account of the many *Geisslerlieder*.[51] Some of their *Lieder* are for example: "*Nun treten herzu, die büssen wollen, fliehen wir die heißen Höllen*" evidently ready made for use during a flagellant procession or pilgrimage. Another "*Sünder, womit wilt du mir lohnen*" is not as forbidding.[52] Although there was not too great a variety of melodies, comparatively speaking, there were a great number of texts which would fit several melodies. And each text had copious verses. A typical instance of fanaticism is the *Geisslersingweise: "Vainent toegen mit den ougen"* which was repeated six times with mounting fury from G Major over to F Major.[53] Major tonality as well as pentatonic elements are to be found most frequently in *Geissler* melodies of 1349 which were connected with acclamations *(Rufe)* and *Leisen*.[54] The *Geisslerlieder* must never be taken as synonymous for the Franciscan contribution to music, for the *Geissler* were condemned by the Church and the Franciscan Order because of their excesses, political connivance and persecution of the Jews.[55] There are many contributions to the *laudi spirituali* from the orthodox followers of St. Francis, not to mention

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[49] *Lexikon für Theologie und Kirche*, II, 229.
[50] *Lexikon für Theologie und Kirche*, IV, 345. Besseler, *op. cit.*, p. 152.
[51] Reese, *Music in the Middle Ages*, p. 236 ff. Lang, *Music in Western Civilization*, p. 114.
[52] Weinman, *op. cit.*, p. 54.
[53] Ursprung, *op. cit.*, p. 103.
[54] Besseler, *op. cit.*, p. 177.
[55] *Lexikon für Theologie und Kirche*, IV, 345.

the *Cantico al Sole* by the Saint himself, so that Franciscan music need not look first to *Geisslerlieder*.

Of equal interest are also the Goliards, or *Vagantes*, to whom we trace the resurgence of the "*Mischdichtung*" and "*Mischlieder*" These wandering "*Teufelsknechte*" and "*Satanskerle* "were responsible for some of the wittiest and also some of the most lascivous Latin parodies and poems of the middle ages There were indeed irresponsible clerics among them, but probably not incorporated in any particular Order[56] Since "cleric" does not only mean "priest" but also any stage leading thereto there was not always a question of singing of lascivous songs "in sacred precincts in vestments."[57] Against the abuses that actually did creep in, the Council of Trier 1227 commanded:

> . . . ut omnes sacerdotes non permittant trutannos et alios vagos scholares aut goliardos cantare versus super Sanctus et Agnus Dei aut alias in Missa vel divinis officiis; quia ex hoc sacerdos in canone quamplurimum impeditur et scandalizantur homines audientes.[58]

Some of the chief representatives of this *genus hominum* were Hugo of Orleans, the "Archpoet" who was a Rheinlander cleric, Walther de Chatillon, Heinrich d'Avranches, Walther Map and others. Naturally the "*gogliardi*" met with ecclesiastical opposition because of the unsavory poetry that issued from their ranks. Thus the councils of Trier in 1227 and of Sens in 1485 were most emphatic against them.[59] Yet the Church did not only work negatively to counteract the ribald poetry, but positively also, for many monks and clerics composed beautiful *Mischlieder* for sacred use. Translations of sequences, and *Glossenlieder* were written in abundance. Thus we have the Latin phrase sung first and immediately the German translation added to it:

> Ave Maris stella, bis grüßt ein stern in meer,
> Tu verbi Dei cella, Du Gottesmuoter her.[60]

But the real "*Mischpoesie*" is an interchanging of Latin and German verses:

> In dulci jubilo,
> Nu singet und sit froh!
> Unsres Herzens Wonne
> Leit in praesepio
> Und leuchtet als die Sonne
> Matris in gremio
> Alpha es et O.[61]

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[56] *Lexikon für Theologie und Kirche*, X, 468.
[57] Lang, *op. cit.*, p. 97. [58] Romita, IVS Musicae Liturgicae, p. 42.
[59] Haas, *Aufführungspraxis der Musik*, in *Handbuch der Musikwissenschaft*, IIb, 69.
[60] Weinman, *op. cit.*, p. 55.
[61] *Ibid.*, and *Kirchenlexikon*, V, 1010; see also next page note 61a

This has been connected at least for its Latin text with the mystic, Heinrich Suese von Ulm. Here also we see the major-minor tonality present to a great degree.

One cannot rightly bypass the Meistersingers of the fourteenth century since some of their works, popular in appeal, found their way into church use before and after the reformation. Even though they often adopted the stylized form of *Stolle*, *Gegenstolle*, and *Abgesang*, they remained close to the folksong and choral. Hans Sachs of the sixteenth century "corrected" the *"Maria zart von edler art"* into the *"O Jesus zart von neuer Art."* He also reworked the *"Dich Fraw von hymmel ruff ich an."* Conradt von Quienfort of the fourteenth century is responsible for the Easter song: *"Du Lentze gut dess Jahres thewres quarte."* From the fifteenth century we have the *"Begrüßet seyst du küinigin"* and the *"Eya Herre got"* in honor of the Three Kings.[62]

Some of the most interesting interchanges of melodies are to be found in the contrafacts or parodies, which have a long history. Many "secular" melodies were adapted to religious use, and vice versa, a sign of the versatility and universality of a good melody. Just as sacred Masses borrowed the theme of *"L'Homme Armé,"* so the church took over the melody and practically all the words of *"Inspruck ich muß dich lassen, ich fahr dahin mein straßen, in fremde Land dahin"* which then became *"O Welt ich muß dich lassen, ich fahr dahin mein straßen, ins Ewig Vaterland."*[63] As early as the end of the twelfth century we have Streinmar's *"Sumerzit, ich froeuwe mich din"* changed to *"Himelriche, ich froeuwe mich din."*[63a] Later on in the sixteenth century, the Lutheran church capitalized on *contrafacta*. Perhaps one of the most interesting contrafacts used by both Catholics and Protestants alike is the secular song *"Mein Gemueth ist mir verwirret, dass macht ein maedchen zart"* included in Hans Leo Haßler's *"Lustgarten neuer teuscher Gesaeng."*[64] We know this melody with the words: *"Hertzlich thut mich verleiden"* of the Bach organ chorale or the Passion Cantata: *"O Haupt voll Blut und Wunden,"* based on the original Latin text of St. Bernard of Clairvaux:

[61a] Fallersleben, Hoffman von, *Die Geschichte des deutschen Kirchenliedes bis zu Luthers Zeit*, Beitrag: *In dulci Jubilo. Nun singet und seid froh — Ein Beitrag zur Geschichte der deutschen Poesie. Kurze Geschichte der Lateinisch-Deutschen Mischpoesie*, passim (Hannover, Rümpler, 1861).

[62] Ursprung, *op. cit.*, p. 105.
Haas, *op. cit.*, p. 86.

[63] Weinman, *op. cit.*, p. 54.

[63a] Fallersleben, Hoffman von, *Die Geschichte des deutschen Kirchenliedes bis Luthers Zeit*, (Hannover, Rümpler, 1861) p. 372 and 373.

[64] Lang, *op. cit.*, p. 251.

"Ave Caput Cruentatum." It appears in hymnals, both Catholic and Protestant as: "O Sacred Head Surrounded . . .," or "O Sacred Head now Wounded . . ." The monophonic settings of the psalms in the *Souterliedekens* are likewise *contrafacta* from popular folksong.[65] Some of the French contrafacts are of the most interesting. The romance: *"O Fontenay, qu'embellissent les roses"* kept the same melody but changed to *"O saint autel, qu'environnent les anges."* Likewise, even a modern patriotic song such as: *"La République nous appelle, Sachons vaincre, ou sachons périr: Un français doit vivre pour elle, Pour elle un français doit mourir."* becomes a contrafact. Changing the words *"République"* for *"Religion"* and *"français"* for *"Chrétien,"* we get a pious hymn: *"La Religion nous appelle, Sachons vaincre, sachons périr: Un chrétien doit vivre pour elle, pour elle un chrétien doit mourir."*[66] While some very beautiful melodies have come to us from the contrafacta, very many hackneyed verses have also come along. The *contrafacta*, however, in general did make a definite contribution to the melodic body of church music as such.[67]

Yet the music of this period before the reformation was not only given to translations and perodies, but to a resurgence also of creative work in the line of hymns. From the *"Media vita"* comes the beautiful three stanza *"En mitten in des lebens zeyt"*[67a] and the *"Salve Regina"* takes on the form of a *Leich*. Later on Hans Sachs changed the *Salve Regina* into the *"Salve, ich grus dich schone, Rex Christe"* with a new melody. The *Salve Regina Leich* by Heinrich Laufenberg is an interesting study in derivation and analysis:

Bis gruest maget reine,
Kungin bist alleine,
Aller welt gemeine,
Erbaermd hat sie nit cleine,
Die ich nun meine;
Leben kan si bringen,
Sueskait us ir tringen,
Der ich hie wil singen,
Und hoffnung unser dingen,
Bis gruest hilf uns glingen.[68]

If we compare this with the *Salve Regina* melody, we see that melodically, the German *Lied* has come from the Gregorian, but has been altered to the requirements of the German text and purpose. Thus the first member of the *Salve Regina* has the melodic type of mode one without the *teu*. On examining the *"Bis gruest maget reine"* we find the complete melodic type given. It can be safely stated that during the fifteenth

[65] Apel, *op. cit.*, p. 703.
[66] Gastoué, *L'Église et la Musique*, p. 134.
[67] *Lexikon für Theologie und Kirche*, V, 1010.
[67a] Cf. p. 80 and 80b.
[68] Besseler, *op. cit.*, p. 178.

century we already have the type of *Luther-Lied* already established.[69] Although many of the *Lieder* originated from the minnesingers and meistersingers sources, nevertheless especially during the century preceding the Reformation, the German *Lied* was used more and more in the church, as we shall see from Luther's own testimony presently. The contrafacta while contributing religious music did not come into general church use till the sixteenth century itself. Hymns during the middle ages may well be considered as belonging to the "secondary" liturgy of what we call devotions, processions, etc., but one must not overlook the fact that also during the "primary" liturgy of the Mass, the German hymn was also long in use. Thus, for example, we have the hymn before and after the sermon, as well as the use of hymns during the *Missa Lecta*. Here the hymn has much the same function as the *Offertorium* or *Communio* in a Missa cantata, a musical accompaniment to the liturgy which goes along ahead of what is actually being sung. Often a German hymn was inserted into the Kyrie being sung at Mass. The liturgical dramas, of course, account for the use of many of the beautiful hymns that went over into both Catholic and Protestant hymnals after the reformation. Of interest is the processional hymn *"Godt sy gelobbet"* sung in German to the altered chant of *"Lauda Sion Salvatorem:"*

Godt sy gelobbte und gebenedyet,
der uns alle hait gespysset midt synem fleysch und synem blude,
das gibbe unß lieber herro got zu gude,
das heylge sacramente an unserm lesten ende uß deß gewyten priesters hende.

Kyrie eleison, etc.[70] This German *"Laude Sion"* is met with in the *Crailsheimer Schulordnung* of 1480. Here we find the following passage:

Item circa alia festa resureccionis, ascensionis et corporis Christi habentur plures cantiones, convenientes cum sequentijs: videlicet in sequencias: Victime pascali laudes. Crist ist erstanden circa quoslibet duos versus etc. regulariter fit . . . Tunc sequitur laudabile festum corporis Christi in quo canitur sequencia scilicet illa Lauda Syon salvatorem super qua sequitur ille cantus vulgaris sive popularis. Gott sey gelobet und gebenedeiet.[71]

And evidently there were also hymns used at the High Mass, judging from the decrees of local synods against their use in that place. Thus at the Council of Schwerin (1492) the permission to sing vernacular

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[69] Ursprung, *op. cit.*, p. 108. Gerade der wichtigste Typus des "Luther-Liedes" ist hier bereits geschaffen!

[70] *Ibid.*, p. 109.

[71] Albanus Schachleiter, O. S. B., *Vom katholischen deutschen Kirchenlied*, in *Der Katholik*, *cit.*, p. 56, quoting Bäumker.

hymns during Solemn Mass was recalled.[72] In the succeeding part on congregational singing before the sixteenth century we shall further inspect the canons of this and similar councils.

One testimony to the use of *Lieder* is the fact that after 1470 there were some important song texts published, as for instance the texts on the Ten Commandments around 1490, the Seven Words at Strassburg 1515, the Passion in the same year at Augsburg, etc. Only exceptionally were the melodies also printed before Schubert's printing at Wuerzburg in 1503.

During the reformation itself, the hymn as such survived and more, since it was further exploited by Protestants and Catholics alike. Catholic hymn publications continued as before, so that there appeared in 1524 the "*Hymnarius, durch das ganntz Jar verteuscht,*" significant in view of the postulation that Luther began the "*Verdeutschen*" of previous hymns. There was also the "*Deutsch Betbuch*" by Witzel, published in 1537, containing a collection of hymns. In 1537 the Dominican, Michael Vehe, published the "*Ein New Gesangbüchlin Geystlicher Lieder*" at Leipzig. Of the fifty-seven hymns in German only twenty-one were taken from the preexisting store of *Lieder.*

Thus we see that before the Reformation there were many German hymns both for church and devotional use. Actually at least 1,448 hymns have been shown to belong to the prereformation period.[73] Hence it was nothing new at Luther's time to sing in German at Mass.

In view of the work of scholars for the last hundred years on prereformation hymnology, it is unbelievable to read in Luther Reed's "Luther and Congregational Song,"[74] that before Luther there were only a few Kirchenlieder, and these a "mongrel" type (!), a half breed Latin and German! Such a statement cannot be the result of scholarly study, especially in view of the work done by such Protestant scholars as Moser, who devotes many pages to the "*Vorreformatorisches Kirchenlied*" in his book: "*Die Melodien der Lutherlieder,*"[75] as also by the famous Wackernagel who had this to say about prereformation hymns: "*Kein Volk der Christenheit konnte sich eines solchen kirchlichen Lieder-*

[72] Hefele-Le Clerq, *Histoire des Conciles* (Paris: Letouzey et Ané, 1917), VIII, 143. L'Année 1492 voit encore en Allemagne plusieurs synodes diocésains: à Schwerin, où l'évêque Conrad Losten donna des décrets en LX chapitres: on y rélève la permission de chanter un cantique en allemand pendant la grand' messe.

[73] Weinman, *op. cit.*, p. 57, citing Wackernagel: "Das deutsche Kirchenlied von der ältesten Zeit bis zum Anfang des 17. Jahrhunderts."

[74] Luther Reed, "Luther and Congregational Song," in *Papers of the Hymn Society*, XII (1947), no pagination given.

[75] H. J. Moser, *Die Melodien der Lutherlieder*, chap. i.

schatzes, einer so poetischen Bezeugung seines Glaubens rühmen, als das deutsche Volk beim Beginne des XVI. Jahrhunderts."[76]

The vernacular *Lied* is an interesting phenomenon and has a most interesting history. Although it is certain that Luther did much towards the further development of the German *Kirchenlied* because of his position and his writings within the communion established by him,[77] he cannot be said to have initiated either the vernacular *Kirchenlied* or congregational singing as such.[78] In 1148 the Reichersberger Provost Gerhoh wrote in his explanation of the psalms: *"Die ganze Welt jubelt das Lob des Heilandes auch in Liedern der Volkessprache; am meisten ist dies unter den Deutschen der Fall, deren Sprache zu wohltönenden Liedern geeigneter ist."* — "The whole world celebrates the praise of the Saviour also in vernacular song; this is especially the case with the Germans whose language is better suited to well sounding *Lieder*."[79]

The *Lied* is usually divided into *Kunstlied, Volkslied, Studentenlied, Vaterlandslied, Kinderlied,* and *Kirchenlied.*[80] Closely akin to the latter is the *Geistliches Lied,* which as history shows may or may not be used in church. The essence of the *Kirchenlied,* strictly so called, lies in the fact that it was made for the church. And yet many a *Geistliches Lied* will also qualify for church use whether or not it was primarily intended for it.[81] By *Geistliches Lied* is usually understood a type of spiritual *Kunstlied,* songs by mystics like Tauler, or by minnesingers, songs arising from the *Volkslied.* This descriptive definition would then cover the *Leisen,* and the hymns used for the Passion, Easter and Ascension in the middle ages.[82] Some will conclude from this that there was strictly

[76] Albanus Schachleiter, O. S. B., *Vom katholischen deutschen Kirchenlied,* in *Der Katholik cit.,* p. 55, quoting Wackernagel.

[77] *De Katholieke Encyclopaedie* (Amsterdam, 1953), XVI 880: Onmiskenbaar zijn echter Luthers verdiensten voor de ontwikkeling van de Duitse taal en het kerkelijk lied.

[78] Groves, *Dictionary of Music and Musicians* (New York: Macmillan, 1927), III, 255. There is ample evidence that German hymns were sung during the service before Luther's alterations . . .

[79] Schachleiter, *op. cit.,* p. 53.

[80] "Lied," *Enciclopedia Cattolica,* (Firenze, 1951), VII, 1337. Esso (Lied) assunse varie denominazioni, secondo che aveva il carattere di forma d'arte aristocratica: Kunstlied; di canto di Chiesa: Kirchenlied; di canzone popolare: Volkslied; di canto studentesco: Studentenlied; di canto tradizionale nazionale: Vaterlandslied; di canto di bambini: Kinderlied.

[81] "Lied" in *De Katholieke Encyclopedie,* XVI 548. De wezenseigenschap van het kerkelijk lied is, dat het bestemd is voor de kerk; een lied dat een algemeen stichtelijk of zelfs een godsdienstig onderwerp behandelt kan een geestelijk lied zijn, maar is nog geen kerkelijk lied.

[82] *Ibid.,* p. 347. Onder geestelijk lied verstaat men niet zozeer de meer persoonlijke godsdienstige of mystieke kunstliederen, zoals die door vele Minnesingers maar vooral door die mystieke . . . maar de meer in die volkstoon . . . gehouden liederen.

speaking no real *Kirchenlied* before Luther, since the *Geistliches Lied* was not used at the primary liturgical functions. First of all, the distinction between primary and secondary liturgical services has been overemphasized. Secondly, history shows that even at the primary functions vernacular hymns were employed from earliest times, as demonstrated in the previous chapter. Despite the fact that Latin is the universal tongue adopted by the Catholic Church as its official vehicle of liturgical expression, in Germany as early as the thirteenth century it was a general practice to insert a vernacular hymn into the High Mass. There never was a precept against singing hymns at the *Still-Messe* or "Low Mass." Present-day regulations for singing in the vernacular are that the text and melody must be appropriate and balanced, that at High Mass no hymn in the vernacular be sung, at Low Masses or exposition of the Blessed Sacrament some vernacular songs may be sung as long as they have liturgical texts, usually translations.[83] Hymns *(Gesingl)* at Low Mass are not only allowed but often enough encouraged, as for example by the Council of Prague in 1860.[84] It is true that in Germany decrees were issued by councils against vernacular singing, but this was for the High Mass not for the many other liturgical functions. Thus the synods of Basel (1435), Eichstätt (1446), and Schwerin (1492) forbade the German congregations to sing vernacular hymns after the Latin intonations of the priest at High Mass. Yet the fact remains that more often than not even these limitations were not carried out.[85] It was really a "*praxis contra legem*" — a custom against the law, in the canonical sense of "*interpretatio usualis*," the common interpretation of the law. Actually, the custom of using only Latin in the universal church for the High Mass could in a very definite sense be applied to Luther's own original conception on the subject. It would coincide with his idea of the principal and lesser service.[86] In the "*Formula Missae*" of 1523, Luther was not concerned with "introducing a new

[83] *Ibid.*, p. 549. Tekst en melodie moeten steeds goedgekeusd zijn; bij een strikt-liturgische dienst mogen nooit kerkelijk liederen in de volkstaal gezongen worden; bij een stille H. Mis of gedurende de uitstelling van het H. Sacrament mogen geen kerkelijk liederen gezongen worden, die geen vertalingen zijn van strikt-liturgische teksten.

[84] Romita, *Ius Musicae Liturgicae*, p. 175. Non omnis liturgia tamen cantum ut partem integrantem requirit, sed solemnis praecipue . . . ut e. g. Missa Solemnis, Vesperae solemnes . . .

Cantiones sacras lingua vulgari conditas praesertim in minoribus cultus divini solemnitatibus et officiis quotidianis non tantum admittimus sed etiam summopere optamus, ut parochorum et chori rectorum pia sollicitudine in populo promoveantur. (p. 108 ff).

[85] Weinman, *op. cit.*, p. 59.

[86] Ferguson, *Short History of Music*, p. 135.

liturgical language or with paraphrasing portions of the historic order in German verse for the immediate use by congregations of limited capacity . . ."[87] The larger churches with facilities were to pursue the Latin liturgy complete with Matins and Vespers, parts of the *Divinum Officium* of the Catholic Church.[88] Hence we see the speciousness and superficiality of a statement like this:

> In 1524 Protestant church music had its birth. In that year Luther's musical collaborator, friend, and advisor, Johann Walther, published in Wittenberg the first monument of Protestant polyphonic art, the *Wittenbergisch-Gesangbüchlein*, a collection of spiritual songs and motets for the use of the Protestant divine service. But for four centuries Luther's own contributions, his German chorales, have been much more important for Protestant music. Luther had a perfectly clear conception of the kind of music he needed for the new church. He wished to reach the common people, and for that neither the Latin language nor Gregorian chant were of use to him. To achieve his end he introduced German instead of the Latin of the Catholic service, and chose in place of the noble but complex melodic substance of Gregorian chant something much simpler, less pretentious, more akin to German folk song.[89]

Besides the fact that German was not immediately introduced into congregational use in general, the fact also is important that not until Lucas Osiander's collection *"Fünfzig geistliche Lieder und Psalmen"* of 1586 the first song book dedicated purposely to the chorale singing of the congregation was introduced.[90] The "something, simpler and less pretentious" was hardly to be found in the song collection mentioned in the paragraph quoted above, since these selections, often of Catholic polyphonists, were meant for a trained choir of *Kantoren*.

The people of the early Renaissance were not as sure of their divisions and definitions as are many contemporary musicologists. To object that there was no *Kirchenlied*, proper, but rather *geistliche Lieder* which were incidentally used in church betrays a conviction stronger than logic and history. Many hymns both properly so called *Kirchenlieder* and the *geistliche Lieder* of many origins were used at both primary and secondary liturgical functions before Luther. To this Luther, himself, will attest. In his *"Predigt am heiligen Ostertage"* Luther mentions several hymns used in his Catholic days in church and at Mass:

> In the papacy we sang fine songs, such as: *"Der die Hölle zerbrach und den leidigen Teufel darrinne überwand, damit erlöst der Herr die Christenheit,*

[87] Reed, *Lutheran Liturgy* (Philadelphia: Muhlenberg, 1947), p. 71.
[88] Blume, "Die Evangelische Kirchenmusik" in *Handbuch der Musikwissenschaft*, IX, 8.
[89] Leichtentritt, *Music, History and Ideas*, p. 104—105.
[90] Reese, *Music in the Renaissance*, p. 684.

etc.," likewise: *"Christ ist erstanden von seiner Martyr alle."* That was certainly sung from the heart . . . At Christmas was sung: *"Ein Kinderlein so löblich ist uns geboren heut,* etc." At Pentecost was sung: *"Nu bitten wir den heiligen Geist,* etc." The gospel text was read to the people, the Passion or story of the sufferings of Christ. At Mass was sung the good hymn: *"Gott sei gelobet und gebenedeiet, der uns selber hat gespeiset,* etc. . . ."[91]

The *"Christus ist erstanden"* we recognize as the hymn sung during the Paschal dramatization, the *"Quem quaeritis"* ceremony described in the previous chapter. The *"Nu bitten wir den heiligen Geist"* was a *Leis* used at Pentecost. And the hymn sung at Mass also ended with a *"Kyrieleison"* after each stanza. These hymns were all taken over by Luther and his musical collaborators for use in the evangelical church. Not only does Luther mention vernacular hymns in use at his time, but he also came to suggest the use of Latin hymns in the services of his own church on the feasts of Christmas, Easter, Ascension and Pentecost, wherever the Latin service of the *Formula Missae* could not be used. Thus in the instruction of the *visitatores* to the parish church of Henry of Saxony, Luther states:

> Some sing German, other sing Latin Masses, and we allow this condition. Yet is seems useful and good, that where most of the people don't know Latin, to have German Masses there . . . On big feasts, such as Christmas, Easter, Ascension and Pentecost and the like it would be good if at the Mass some Latin hymns were sung, that are according to Scripture.[92]

As a further testimony to former times, Luther states in the preface to the *"Geistliche Lieder,"* Wittenberg, 1535: "Here follow some sacred songs composed in former times. These we have collected . . . to serve as testimony to the pious Christians that have gone before us."[93]

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[91] Luther, *Gesammelte Werke,* V, 23. Im Papstthumb hat man feine Lieder gesungen: Der die Hölle zerbrach, und den leidigen Teufel darinne überwand, damit erlöst der Herr die Christenheit, etc. Item, Christ ist erstanden von sener Martyr alle usw. Das ist von Herzen wohl gesungen . . . Zu Weihnachten hat man sungen: Ein Kinderlein so löblich, ist uns geboren heut. Zu Pfingsten hat man gesungen: Nu bitten wir den heiligen Geist, usw. Man hat dem Volk fürgelesen den Text des Evangelii, die Passion oder Historie dez Leidens Christi. In der Messe hat man gesungen das gute Lied: Gott sei gelobet und gebenedeiet, der uns selber hat gespeiset, usw.

[92] Luther, *Gesammelte Werke,* XXIII, p. 46. Unterricht der Visitatoren an die Pfarrherren im Herzog Heinrichs zu Sachsen Fürstenthumb, 1528 und 1538. — Etliche singen deutsche, etliche lateinische Messen; welchs wir lassen geschehen. Doch wird für nützlich und gut angesehen, wo das meiste Volk des Latein unverständig, daselbst deutsche Messe zu halten . . . An hohen Festen, als Christtag, Ostern, Auffahrt, Pfingsten, oder dergleichen, wäre gut, daß zur Messe etliche lateinische Gesenge, die der Schrift gemäs, gebraucht würden. Denn es ist ein Ungestalt immerdar, einen Gesang singen. Und ob man deutsche Gesenge will machen, daß sich des nicht ein iglicher vermesse ohn Gnade dazu zu haben.

[93] Weinman, *op. cit.,* p. 58.

Melanchthon, a close friend and associate of Luther, concurred with the reformer in his evaluation of Latin and also of the fact of pre-existing vernacular hymns:

> We therefore bring to mind and admonish that Latin lessons and prayers be retained among us. Ceremonies should be observed both that people learn Scripture, and also that being advised by words, they may conceive faith and fear, and may also pray, for these are the purposes of ceremony. We retain the use of the Latin language on account of those who are learning Latin, and we will also include German hymns that the people may also have something to learn, to bring out their faith and reverence. This was always the custom in the churches. For though in some places more, in others less, German hymns were sung, nevertheless almost everywhere the people sang something in their own tongue.[94]

Like Luther Melanchthon favored the use of Latin songs as well: "The Latin song is good for the children, for their proper education. Nor would I like to see the artistic or figured *Gesang* done away with."[95]

Luther and Melanchthon's tribute to the German hymns of former times was not a sterile one. The Latin-German Lieder and the *deutsche geistliche Lieder* are at least two very real sources of the evangelical *Kirchenlied*. Besides the Leisen, their continuation in the crusader hymns, the *geistliche Lieder* of the Minnesingers and Meistersingers, the three centuries before the Reformation furnish a very substantial fund of German hymns. Not only the hymn but the form of the chorale existed before Luther, as shown in the preceding chapter.[96] Besides the pre-reformation hymns mentioned by Luther, are also the baptismal hymn of Heinrich von Laufenberg: "*Ach lieber Herr Jesu Christ*" and the hymn of faith by Nicholas von Kosel: "*Wir glauben all an einen Gott.*" The beautiful hymn: "*In Gottes Namen fahren wir*" and "*Da Jesus an dem Kreuze stund*" must also be traced to the time before the reform-

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[94] *Corpus Reformatorum*, Melanchthon, Opera Omnia, XXVII, 607. Apologia II, Latina Amplior. Nosque ideo commemoramus, vt obiter admoneamus et apud nos retineri latinas lectiones et orationes. Cum autem ceremoniae debeant obseruari, tum vt discant homines Scripturam, tum vt verbo admoniti concipiant fidem, timorem, atque orent etiam nam hi sunt fines ceremoniarum. Latinam linguam retinemus propter hos qui latine discunt atque intelligunt et admiscemus Germanicas cantiones, vt habeat et populus, quod discat et quo excitet fidem, timorem. Hic mos semper in ecclesiis fuit. Nam etsi alius frequentius, aliae rarius admiscuerunt Germanicas cantiones, tamen fere ubique aliquid canebat populus sua lingua . . .

[95] *Corpus Reformatorum*, Melanchthonis Opera Omnia, I, 79. Es ist das lateinisch Gesang gut für die Knaben, so zu Lernung gezogen werden. Ich will auch hiemit die künstlichen oder figurirten Gesang nicht verworfen haben.

[96] Alfred Bernier, S. J., *Saint Robert Bellarmin et la Musique liturgique* (Paris: Desclée et Brouwer & Cie, 1939), p. 22, in: La crise de la musique sacrée.

ation. In addition there are many other German hymns such as *"Armen Judas"* which was furnished with various Lutheran texts, Triller's *"Lob und Dank wir sagen,"* Hermann Bonnus' *"O wir armen Sünder,"* the hymn: *"Gott sei gelobet und gebenedeiet," "Gelobet seist du Jesus Christ," "Gott der Vater wohn bei uns," "O Lamm Gottes unschuldig,"* and many others. The German hymn became an integral part of the divine service in prereformation times, despite ordinances to the contrary regarding the High Mass, itself. The frequent use of such hymns explains their quick acceptance within the newly founded communion of Luther.[97] The German people have always loved their language, and understandably so, since it is one of the most expressive and artistic idioms of Europe. Thus it is understandable to a great degree why the German hymn should become a part of the Liturgy itself by the *praxis populi*. Actually vernacular hymns were used by the people since the ninth century,[98] though Moser seems to think that the translations written in German between the lines of Latin hymns served only as a pedagogical means for clerics learning Latin. Although Luther gave importance to the German *Kirchenlied*, he did not make it the very essence of evangelical music. There are three types to be considered, the *Gesang* which grew out of Gregorian chant and was monophonic, the polyphonic Mass and motet music, and finally the *Kirchenlied* which could be either polyphonic and monophonic.[99] Hence it is rash simply to state what one usually heard about the German language and hymns of Luther's church. The fact that the German hymn gradually became preponderant in the course of time cannot banish the historical fact that originally it was but one of three species, and at no time the very substance of the evangelical church.

Hence Luther cannot be regarded as the "Father of the German Hymn" though he may well be called the promoter of the evangelical hymn. Though he favored congregational singing besides the Latin ceremonies and the polyphonic settings which demanded a specially trained choir, we can "no longer regard the introduction of congregational singing as his work, since it has been shown that it was already customary in the fifteenth century" and earlier.[100] The trained choirs were the

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[97] Blume, *Die Evangelische Kirchenmusik* in *Handbuch der Musikwissenschaft*, IX, 11.

[98] Bernier, *op. cit.*, p. 18, quoting Janssen, *L'Allemagne et la Réforme*, I, 219. Dès le IXe siècle, les chants religieux et les cantiques spirituels en langue vulgaire étaient en usage en Allemagne.

[99] Blume, *op. cit.*, p. 8.

[100] Weinman, *op. cit.*, p. 57, quoting Langhaus, *Geschichte der Musik*, I, 54.

Kantoreien which had their beginnings also in pre-reformation choral organizations.[101] We still find today hymnologists capable of a statement such as this: "His (Luther's) pioneering (?) in the field of congregational song ushered in a new era in public worship." Such a statement reveals a lack of knowledge of the history of the pre-reformation Kirchenlied and its use in the liturgy in Germany.[102]

We must also bear in mind that Luther's first church order was not the *"Deutsche Messe"* to which he claimed he was forced[103] but rather the *"Formula Missae."* Moreover in his *"Von der Ordnung des Gottesdienstes in der Gemeinde,* 1523" Luther states:

> On Sunday the entire congregation should assemble . . . and sing Mass and Vespers as heretofore; . . . The *Gesänge* in the Sunday Masses and Vespers should be let as they are, since they are usually good and taken from Scripture, yet they can be reduced in number or more added. But it is the duty of the pastor to settle on the *Gesänge* and psalm to be used every morning and evening, so that each morning they ordain a psalm a fine *responsorium* or antiphon with collect . . .[104]

This most likely means the use of Latin singing, and would thus further show Luther's attitudes regarding the prereformation singing even in Latin. However, *Gesänge* could also very definitely mean German hymns sung at the Mass, and thus would further substantiate the evidence that German hymns had been sung before the reformation, since Luther speaks of retaining what was had *"wie bisher gewohnet"* — as was hitherto the practice.

In modern German *"Kirchengesang"* is used for both Latin and German "song." Thus Ch. Mouffang in his article: *"Die Pflege des Kirchengesanges in der Erzdiözese Mainz"* speaks of the *"cantus Romanus"* as *"Kirchengesang,"* and also of vernacular *"Deutsche Kirchenlieder"* as *"Kirchengesang."* Here he refers to the ban on Gregorian chant (!)

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[101] Curt Sachs, *Our Musical Heritage,* p. 153.

[102] Luther Reed, *Luther and Congregational Song,* in the *Papers of the Hymn Society,* ed. Price (New York, 1947), XII, no pagination given.

[103] Gaillard, *Loys Bourgeois,* p. 24. Sa — Luther — tolerance vis-à-vis de la forme du culte nous apparait dans toute sa simplicité dans une lettre au pasteur Provost de Kiel où il écrit: "Je ne veux pas apprendre que l'on supprime la messe en latin, et je n'aurais pas accepté la messe allemande si je n'y avais été forcé."

[104] Luther, *Gesammelte Werke,* XXII, 155. Des Sonntags aber soll man solch Versammlung für die ganzen Gemeine geschehen . . . und daselbs, wie bisher gewohnet, Mez und Vesper singen . . . Das Gesänge in den Sonntagsmessen und Vesper lasz man bleiben, denn sie sind fast gut und aus der Schrift gezogen, doch mag mans wenigern oder mehren. Aber des Gesänge und Psalmen täglich des Morgens und Abends stellen, soll des Pfarrs und Predigers Amt sein, dasz sie auf ein iglichen Morgen ein Psalmen, ein fein Responsorium oder Antiphon mit einer collecten ordenen . . .

in Mainz in a pastoral ordinance of February 28, 1788, and the installation of vernacular German *"Kirchenlieder."*[105]

Another instance of Luther's recalling the songs sung during the "papacy" is seen in his foreword to the "Latin and German Songs for Burial Service" — *"Dem christlichen Leser: Christliche Gesänge Lateinisch und Deutsch zum Begräbnis":*

> Moreover we have in addition, for example, the beautiful music or *Gesänge* that were used in the papal church *(Papstthumb)* for vigils, Masses for the Dead, and Burial; these we have taken and had printed in this little book, and with time we want to take more of the same. The *Gesang* and the notes are artistic . . . Accordingly they also have many beautiful and suitable music or *Gesänge*, especially in the convents and parishes . . .[106]

While the *Gesänge* could possibly mean the chant of the papacy, here it doubtless means the German hymns, since that is the purpose of the collection *"Christliche Gesänge."* Besides the references to the burial songs and those on vigils, Luther attests forthright to the use of fine German hymns in the convents and parishes at his time! In the songs added to this collection a choice is given, furthermore, between German songs and Latin:

> The German songs: *"Mit Fried und Freud"* can be sung one after the other when coming home from the burial; likewise Latin songs can be employed: "Jam moesta quiesce, si enim credimus, etc."[107]

To understand fully the subject of congregational singing before Luther's time and during the development of his own liturgy, a knowledge of prereformation liturgy is most helpful. This shall be treated elsewhere extensively, but here a few salient ideas will help bridge the gap between the prereformation liturgy and that of the reformation. Liturgy and music are inextricably interwoven in church history and the one cannot be fully grasped without the other.[108]

If indeed the German people did sing in the vernacular before the reformation, they also sang in Latin. Luther did not want to break away

[105] Ch. Mouffang, *Die Pflege des Kirchengesanges in der Erzdiözese Mainz*, in *Der Katholik*, Zeitschrift für katholische Wissenschaft und kirchliches Leben, 1884, Zweite Hälfte, Mainz, p. 406 ff.

[106] Luther, *op. cit.*, LVI, 301. Zudem haben wir auch zu guten Exempel die schönen Musica oder Gesange, so im Pabstthumb in Vigilien, Seelmessen, und Begräbnisz gebraucht sind genommen, der etliche in dies Büchlein drücken lassen und wollen mit der Zeit derselben mehr nehmen. Der Gesang und die Noten sind köstlich . . . Also haben sie auch wahrlich viel treffliche schöne Musica oder Gesang, sonderlich in den Stiften und Pfarren . . .

[107] *Ibid.*, p. 306.

[108] Kretzschmar, *Einführung in die Musikgeschichte*, p. 3. Der Theologe begreift die Kirchenordnungen Martin Luthers nur dann ganz, wenn er von den sächsischen Kantoreien weiß, die Entwicklung der Liturgie überhaupt läßt sich nur mit Hilfe der Musikgeschichte gründlich aufdecken . . .

from this practice as seen from the *Formula Missae* and also from the *Deutsche Messe* where we find the following statement by Luther:

> But with the feasts such as Christmas, Easter, Pentecost, St. Michael, Purification and the like, things should proceed as hitherto, Latin songs until there are enough German songs ready. For this work is in its development and thus not everything is ready that pertains to it; . . .[109]

It is important to note how highly Luther thought of the Latin language. He recognized it as the cosmopolitan vehicle that it was and wanted all to learn it.[110] He even went so far as to prescribe a course of Latin authors that pupils should study; and he concludes by saying that children should learn to speak Latin. The schoolmaster, who must be a musician,[111] must speak only in Latin with his pupils to give them an opportunity to practice that language.[112]

Thus we see how oversimplified and untrue are careless statements about the German hymn, the Latin language and divine services before and after the reformation. Even today many Protestant services will have Gregorian chant featured in them.[113] It is common knowledge that Luthern chorales are often taken from chant motifs.[114] Besides this psalm chants were used, as we saw in the *Christliche Gesänge Lateinisch und Deutsch zum Begräbnis*. "The Liturgy of the German Protestant churches for a long time kept many antiphons and Latin responses from this source, with their ancient and traditional chant."[115]

However, it is undeniable that Luther had a great influence on furthering the German evangelical hymn directly, and the hymns of other communions indirectly at least. The *Formula Missae* was only of three forms given out by himself and was not to be considered obligatory. In the long run the fact that in the Protestant church complete freedom of liturgical practice or non-practice was given, has been to its musical disadvantage.[116]

Unlike the Catholic Church which in its High Mass, especially the Solemn High Mass, has preserved liturgical and musical uniformity —

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[109] Luther, *op. cit.*, XXII, 243.
[110] Luther, *op. cit.*, LXII, 296.
[111] *Ibid.*, p. 308.
[112] Luther, *op. cit.*, XXIII, 70.
[113] Davison, *Church Music*, (Harvard, 1952), p. 44.
[114] Bernier, *op. cit.*, p. 23.
[115] Gastoué, *l'Église et la Musique*, p. 53. Les chants luthériens dans leur origines, viennent d'ailleurs en partie du grégorien, ou l'avoisinent à merveille; la liturgie des églises protestantes d'Allemagne conserva longtemps nombre d'antiennes et de répons de ce repertoire, avec leur chant ancien et traditionnel.
[116] Davison, *op. cit.*, p. 84.

and here we speak only of the Latin Rite — the Evangelical Church and Protestantism in general have no real liturgical or musical tradition.[117]

From the wealth of evidence, then, we see that far from being an innovator, Luther simply fitted well into the picture already developed. Far from being the originator of the German hymn or chorale, he did nevertheless become responsible for its continuation and development through his musical followers. Musically and liturgically, therefore, the prereformation era had already prepared the way for what was to come.

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[117] Alfred Einstein, *Music in the Romance Era*, Church Music, p. 157.

THE TEACHING OF JOHN DUNS SCOTUS ON THE NATURE OF THE DIVINE MATERNITY

Jesus Christ, true God, true man, was born from the Virgin Mary, deriving "from her his sacred body born according to the flesh and perfected by an intelligent soul to which the Word of God was hypostatically united,"[1] and therefore, "if the Son of the Blessed Virgin Mary is God, certainly she who bore Him should rightly and deservingly be called Mother of God. If the person of Jesus Christ is one and divine, surely Mary is not only Mother of Christ but she should be called Deipara, Theotocos. She who was acclaimed by Elizabeth, her relative, 'mother of my Lord,' who is acknowledged by the martyr Ignatius to have brought forth God; She from whom Tertullian says God was born, we can all venerate as the beloved Mother of God, her whom the eternal Godhead favored with the fullness of grace and honored with so much dignity."[2]

Mary, then, is the Mother of God. But how is she the Mother of God? More specifically: what is the nature of Mary's causality in the process of Christ's physical generation? This basic question in Mariology, some of whose phases continue to divide modern theologians, was expounded at length by not a few of the Scholastics. Perhaps none of them was more aware of its importance and ramifications than John Duns Scotus, whose original and penetrating treatment of the problem seems to us to deserve a fair hearing. Scotus, for example, held this position: Mary's role was an active one in the generation of the God-Man, a position, so it would seem, modern science upholds. At once we are in the midst of a fascinating controversy since St. Thomas and the great majority of the scholastics maintained that Mary's role was a passive one.

Scotus, of course, did not write a treatise on Mary as such. His mariological teachings must be gleaned from his other theological works, for example, the *Opus Oxoniense* and the *Opus Parisiense*. Fr. Charles Balic, O. F. M., has done just this, gathering the relevant materials

[1] Pius XI, Encyclical Lux veritatis, Dec. 25, 1931; in W. Doheny, J. Kelly (Editors), *Papal Documents on Mary*, Milwaukee, 1954, p. 174.
[2] *Loc. cit.*

together in an excellent critical edition, which is a basic source for the Mariology of John Duns Scotus.[3]

What, then, has Scotus to say with regard to the maternity of the Blessed Virgin Mary? Turning to his *Opus Oxoniense*, which treats of the Blessed Virgin at greater length than do the other works and which includes, substantially, all that is contained in those other works, Scotus asks: Was the Blessed Virgin truly the mother of God and man, the mother of Christ? He treats the question in his customary manner, setting down various objections to the doctrines proposed in the question. These having been answered and, a path having been cleared, as it were, the positive teaching on the matter is presented.

On the question "whether the Blessed Virgin was truly the mother of God and man," Scotus proposes the following objections against the divine maternity.

1. Virginity and maternity are contraries. They cannot exist at one and the same time in one and the same subject. Aristotle proves this in his *Metaphysics*. It would seem, then, that the Blessed Virgin cannot be the mother of God.

2. Scotus quotes St. John Damascene as follows: By no means do we say that the Blessed Virgin is the "Genitrix Christi." The Subtle Doctor lists this specific quotation as an objection.

3. Mothers have an active part to play in the generation of children. If they have only a passive role, Adam was the mother of Eve and the dust of the earth was the mother of Adam.

4. The notions of activity and passivity are mutually correlative. If one is present so is the other. Now, the relationship between mother and father is the same as that between activity and passivity. They are mutually correlative. Christ, as a man, had no father and, therefore, he had no mother.

5. In all generation a suppositum is generated. In the particular generation of which we are speaking there is a suppositum already in existence. It was not generated since it was not dependent for its being by an act of generation in time.

Scotus replies to these objections

1. To the first objection, I say that virginity and maternity are not opposed by any formal opposition, either privatively or contrary. For virginity only excludes that action of a natural cause superior to the

[3] *Ioannis Duns Scoti . . . Theologiae Marianae Elementa*, Sibenici, 1933; cf. pp. 80 ss. for Scotus' treatise on the Divine Maternity as given in the *Opus Oxoniense*.

active cause of the mother. Maternity, however, does not necessarily demand the action of this superior cause but it is only concomitant with it as a rule. Thus, if someone else supplies for the action of that natural cause, then maternity is possible according to its entirety.

For example, a created object causes an intellectual image together with my intellect. Now for the intellect to conceive a notion it is commonly required that a created object move the intellect, but this is not required *per se* by its very nature. For if God supplies that action of the object, the intellect is able to conceive the same notion which it would have conceived by reason of the created object. Thus, if the intellect, having been so moved by God to this term, and not being moved by the created object, is designated by the name of virginity or incorruptibility or impassibility, it would not be repugnant that the intellect should be both a virgin and a mother.

2. To the second objection, I say that Damascene did not deny absolutely that Mary was the mother of Christ. He was arguing against the heretic Nestorian who said that Mary was the mother only of the humanity of Christ in subtle language, with such terminology as *Christotocon* as opposed to *Theotocon*. Damascene argued vehemently against this but did not thereby deny that Mary is the Mother of Christ.

3. Two arguments would seem to vitiate the notion of motherhood:

a) According to Aristotle, the father alone is the active cause of generation. The mother is merely passive. The mother simply administers the matter while it is the seed of the father which is the active and formative force.

b) An argument can be drawn from Augustine, so it would seem, for he maintains that Christ did not descend from parents according to a seminal manner. But if the Blessed Virgin was active with regard to the formation of the body of her son, it would seem then that this body was formed according to a seminal manner.

Scotus, however, argues as follows:

I. In the first place, the natural potencies of a given species follow upon the form of that species. However, the male and the female are of the same species. Therefore, a potency of the same type follows upon the form of both. If, then, a vegetative activity follows by nature the form of one, this is also true of the other.

Thus Scotus. His sound and logical reasoning permits but one conclusion. Given the same potency emanating from the same species, given exactly the same activity, namely, generation, we must conclude that this is the same in the male and the female of the species. The

generative faculty in the male is a vegatative and active one. The same must be true of the female. The generative power of the woman is a vegatative and active one.

II. A father loves a son more than the son loves the father, since everyone loves his own work more than such a work will render in return. Basing himself on Aristotle's *Ethics*, Scotus goes on to say that a mother has an even greater love for her son than does a father. It must be that, in some way, the son is the work of the mother.

Here, too, the reasoning is compelling. Ordinarily a mother has a greater love for her son than does the father. Yet, if a father loves his son even more than a son the father, and if the reason for this lies in the fact that the son is the product of the father's own making, then it must follow logically that the son is also a product of the mother's making. There is required, then, a generative activity on the part of the mother as well as on the part of the father.

III. As often as not, a son is much more similar to his mother than to his father. A mother, therefore, has some force with regard to generation. An agent intends to assimilate an effect to itself. Moreover, an effect is never assimilated to anything save by the action of the agent. Thus, when we find that sons very often resemble their mother, there must be a reason. Logically, therefore, some activity on the part of the mother is necessary with regard to the generation of her son.

4. Scotus states that while it is true that activity and passivity are of necessity referred to one another this is not so with the activity and the passivity of which we have been speaking. In this case, the active power of the father is supplied for by another agent.

5. Scotus quotes Damascene in his *De fide Orthodoxa:* "Truly do we call holy Mary the Mother of God *(Genetricem Dei)*. For as God was truly born from her, so truly is she to be called the Mother of God. Now we say that God was born from her, not, indeed, that the Word according to the Divinity received the principle of being from her, but that the Word of God was made incarnate and born from her. For the holy Virgin did not bear a mere man but true God, not God as God, but God incarnate."

Having presented these telling arguments against that proposition which would say that the mother is but a passive principle in generation, Scotus then draws the logical conclusion from them. Thus, he says if one holds the proposition that the mother plays an active part in the generation of children, albeit a less important role and as a secondary principle, joining with the father in an integral way as one total cause,

then all difficulties disappear with regard to the fact that Mary is the mother of Christ; it is clear that she functioned as an active principle, administering the matter from which the entire body of Christ was formed.

Another Problem Considered

There remains, however, another problem into which Scotus probes, that of understanding just how Mary could cooperate with the Holy Spirit in forming Christ's body. Before presenting his own solution, the Subtle Doctor exhibits and criticizes other explanations which attempt to meet this problem.

To begin with, some say that Mary administered the matter, in which there was an active force, but that this force did not exercise any activity because the Holy Spirit acted first and before any such force could act, forming in an instant that body from the matter which had been administered. The Virgin was, therefore, a mother, if one supposes that a mother's role consists in supplying the matter endowed with an active force, and if it be supposed that this suffices for motherhood, even in the case where a stronger agent, by its prior action, prevented the exercise of that force.

Scotus then launches his criticism of this position: If a fire was perfectly active and was approaching some firewood but this fire was prevented from heating the wood by another and stronger agent since this agent had already done so, the fire would not be the agent causing the heat. But if it is the fire which gives rise to heat, it is the fire which is father to such heat. In this case, then, the fire is not the father of the heat in question. Similarly, if the mother has an active part to play in generation, but she was prevented from acting, she cannot be called a mother, since to be a mother requires causal action on her part.

By way of this easily grasped analogy Scotus shows that the above opinion is utterly illogical. We can readily understand what fire does and what it gives rise to. Very logically Scotus points out that a fire does not actually do that which it is prevented from doing. So in the case of motherhood. The arguments posit, as a condition of motherhood, an active element. But then it goes on to say that such a force was prevented from acting. Scotus logically concludes that if this is the case, we do not have motherhood.

Having shown the improbability of this first opinion with regard to Mary's cooperation with the Holy Spirit, Scotus proceeds to state and criticize a second opinion, the view that "there was conferred upon

Mary a supernatural force in virtue of which she was able to cooperate with the Holy Spirit in an instant." The Subtle Doctor's arguments against this position run as follows:

1. Such a supernatural force would be an accident *per accidens* of this nature. But if the mother acts with regard to the formation of the body of Christ only in virtue of this accident, she does not act in a true and natural way as do other mothers who, by their very nature as mothers, act with regard to the formation of the bodies of their offspring.

2. Similarly, what would be the subject of this supernatural accident? If the accident resided in the will or the intellect then it could not be an active principle with regard to the production of a son for such action belongs primarily to the vegetative power. Is the accident to reside in the vegetative power? Such a thing would be most astonishing.

3. How, then, could this force act? It was created to cooperate or to be the principle of cooperation in an instant with the Holy Spirit. How could it be that it would not be capable of that which is proper to the very nature of motherhood?

4. Further, how can an accident be for the formal principle of producing that substance which is the term of generation? If it is maintained that this supernatural power gives, as it were, an intrinsic perfection to the vegetative power of the mother, we do, indeed, have cause for astonishment. In what way or manner would this force be made more intense, since by its very nature it is ordained to the generation of children? We would then have more than is necessary for the role of motherhood. The Blessed Virgin would be even more than a mother.

Again, in what manner would this intensified force be able to act in an instant and yet, this being accomplished, not be able to act? For forms of the same type, granted one is more perfect than the other, would seem to be able to act similarly either in time or in an instant, granting, again, that one produces something more perfect than the other. This can be seen in the case of two lights, one more perfect, the other less perfect, both of which give light immediately.

Thus does Scotus refute the second opinion which says that a certain supernatural force was given to the Blessed Virgin whereby she could cooperate in an instant with the Holy Spirit. Such a force would be an accident, and not even an accident which could be termed natural. That is, we would have here an accident completely accidental to the nature. How, then, could there be a true and natural motherhood? Again, how could a supernatural accident reside in a vegetative faculty? Further, if it intensifies the natural force of a mother with regard to

generation, a mother becomes more than a mother. On the other hand, if such a vegetative faculty could not act naturally, how could it co-operate with the Holy Spirit with regard to the generation of a child? And, finally, granting for the sake of argument an intensifying force, why should it be necessary for this instantaneous action? All things being equal, a light gives light and instantly. In this way Scotus points out that the opinion under discussion makes Mary no mother, more than a mother, *the* principle of her child.

Scotus presents his opinion

The Subtle Doctor then presents his own opinion. If it pertains to a mother to act as a less principal cause, Mary was truly a mother because all that is true of mothers is true of her. Scotus goes on to explain this view.

As an introductory note and without becoming involved in medieval notions concerning generation and the scholastic approach to the problem, we may simply state the following: In the conception of Christ's body three points may be considered: first, the local movement of the blood to the place of generation; secondly, the formation of the body from that matter; thirdly, the development whereby it was brought to the perfection of quantity.[4]

Now, are these three movements true of Mary? These three movements take place over a period of time in mothers. In Mary these things happened in an instantaneous manner. Scotus declares that Mary was able to cooperate with the Holy Spirit nevertheless. If Mary was not able to cooperate, this was from one of three causes:

1. she did not possess an active, secondary causality with respect to the induction of the term or terms;

2. she could not act according to this active force with regard to the term induced in this manner;

3. she was prevented from such action by a superior force.

1. The first is improbable since Mary possessed this active power. All mothers have a secondary active force with regard to generation, and with regard to the induction of the term or terms. The same is true of Mary.

2. The second is improbable because the means necessary to a less perfect power are not necessary for a more perfect power. It is necessary

[4] St. Thomas Aquinas, *Summa theologica*, III, Q. 31, a. 5.

that a natural agent proceed through certain determined means. An agent superior to this order subjects himself to such an order only of his own volition. Such a one is not bound to the means. Thus it can be argued that the Holy Spirit and Mary constitute a more perfect agent than the ordinary father and mother. This process would be necessary if Mary had conceived of a man. But it was not necessary in that action wherein Mary cooperated with the Holy Spirit.

3. The third opinion is improbable because the Holy Spirit acts freely. Moreover, he is able to achieve a purpose by means of a secondary cause cooperating with Him. He can supply that power of a natural father or even act in a more efficacious manner than such a father, if He so wills it. And Mary could cooperate according to her causality because nothing is taken from her simply because the Holy Spirit has His part to play. He does not frustrate her by His action. He supplies the more eminent causality.

Thus Duns Scotus shows that Mary possesses an active force as do other mothers with regard to the term of generation. She was able to act and did, in fact, act, since she was not prevented from doing so by a previously acting superior force. It may, then, be stated that every active cause possessing some force with respect to an effect, and not being prevented from causing that effect by another in that instant in which it is produced, is able to act with regard to its production. Mary was such, if other mothers are such. Thus, she was an active force, although not the primary cause with regard to the effect she produced.

Now, on the authority of St. John Damascene, it has been declared that the Holy Spirit gave Mary the susceptive power as well as the generative power. He did not give her that fertility whereby she co-operated with Him. She possessed this naturally because she was not sterile and could have produced a son naturally. But an active potency of an inferior cause becomes a remote cause when the superior cause is not in act. Thus, according to the common order of things, the active force of the mother is subordinate to the active force of the father and that certain proximate potency with regard to generation is given to mothers by fathers but not that remote potency whereby she is said to be fertile. This proximate potency was conferred on Mary by the Holy Spirit who possessed the principle causal force. The Holy Spirit, therefore, gave her the generative force, that is, the natural force whereby she was naturally fecund, but the susceptive power was given to her since she was to generate the Word. But, just as the nature which was the formal term of this generation was to be united to the Word only

according to an obediential potency, so this mother possessed only an obediential potency to be the mother of the Word, since the Word subsisted in a nature united to Himself.

A discussion of yet another problem

We turn, with Duns Scotus, to yet another problem: Was Mary the natural mother of Christ or was the generation of Christ miraculous?

In his *De conceptu virginali* Anselm says that this generation was miraculous, and this is, indeed, true with regard to the manner of reducing the active and natural potency of Mary to act. Such could not be reduced to act save by reason of a determined natural cause which was active, for example, the active force of a natural father. This generation was miraculous also with regard to the manner in which it took place, since the three movements occurred suddenly, or else in a very brief time, and this is not the natural process of generation. Nevertheless, the part Mary played was natural since the active potency proper to her was natural. She was naturally fertile and could have conceived of a natural father. Thus, she can be called the natural mother of Christ. Yet, because of the manner of occurrence, this birth can be called miraculous.

Thus, as has already been stated, virginity and maternity are not opposed by any formal opposition, either privatively or contrary. For virginity only excludes that action of a natural cause superior to the active cause of the mother. Maternity, however, does not necessarily demand the action of this superior cause but is only concomitant with it as a rule. If someone else supplies for the action of that natural cause, then maternity is possible according to its entirety. For example, a created object causes, together with my intellect, an intellectual image. Now for the intellect to conceive a notion it is commonly required that a created object move the intellect, but this is not required *per se* by its very nature. For if God supplies that action of the object, the intellect is able to conceive by reason of the created object. Thus, if the intellect, having been so moved by God to this term, and not being moved by the created object, is designated by the name of virginity or incorruptibility or impassibility, it would not be repugnant that the intellect should be both a virgin and a mother. So it is with the case at hand.

To the objection that a virgin is not able to bring forth a child, Duns Scotus replies that here we have a miracle in that a body occupied the same space at the same time as another body. Moreover, this was a

"new" miracle, different from the one whereby the virgin conceived without the action of a natural superior force. There is no difficulty with regard to the bearing of the child in the womb. This would be the same as it was in other mothers. Yet there would seem to be a special difficulty with regard to the actual birth of the child. If the mother is only a passive agent, then whence will come that active power necessary to give birth. There must be an active force involved in this. Then, also, how can one body occupy the same space at the same time as another body, since we are not speaking here of glorified bodies, and it is commonly held that Christ's body was not yet glorified. It must be that the mother of Christ first acted with regard to giving birth and then in the very moment of parturition it was necessary that the Holy Spirit act.

Dun Scotus closes his treatise with a reply to Augustine. He says that only that effect is produced according to a seminal manner to whose production an active force concurs as the total cause. Such was not the case in this particular generation because even though Mary acted by reason of a natural force, nevertheless that natural force was not the total cause, since the Holy Spirit was the primary cause with regard to this generation. Furthermore, he clearly states that the opinion of Galen is to be preferred in this matter. Since this point is brought up it will not at all be amiss to refer to P. Paschalis Lorenzin on this subject. Lorenzin notes that Aristotle makes a clear distinction between the male and the female with regard to generation. It is the male which is the active principle and the male alone. The female is passive and does nothing other than supply the matter and can be compared to the earth which receives and nourishes the seed. On the other hand Galen maintains that, while it may be inferior to the male principle, the female principle is an active one. Moreover, according to philosophical doctrine, it is a difficult thing to reconcile the notions of maternity and passivity on the part of the female. That which is passive cannot be called a source or a principle which the definition of generation demands.[5] This, more or less, sums up the problem.

As Chiodini declares: "It is a scientific truth ascertained and proven in biology that the mother is an active principle in the generation of the offspring, and not merely a passive principle, as many philosophers and theologians, following Aristotle and St. Thomas, have maintained."[6]

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[5] P. Lorenzin, O. F. M., *Mariologia Iacobi a Voragine, O. P.*, Romae, 1951, pp. 16—18.

[6] J. Chiodini, "The Nature of the Divine Maternity," in *Marian Studies*, Vol. VI, 1955, pp. 23—24. Cf. also Crisostomo de Pamplona, O. F. M. Cap.,

Conclusion

Mary, ever Virgin, is the mother of the God-man. As all mothers act with regard to the generation of their off-spring, so did Mary act with regard to the generation of her Son. The mother's role is an active but secondary one. Mothers are as a secondary principle. They possess, therefore, the inferior cause and, thus, the remote, although active, potency with regard to generation which must be reduced to act. This is accomplished by the primary principle of generation ordinarily supplied by a father. In Mary's case she acts as do all mothers but cooperates rather with the Holy Spirit who supplies the principal causal force for the generation of the God-man.

Thus it is that Mary is the mother of Christ, the mother of God. And though we may speak and speak of the woman, this woman who is the mother of our Lord, never shall we speak of her Divine Maternity with more feeling, more meaning, than St. Matthew did, when he said of the Magi, "And entering into the house, they found the Child with Mary His Mother."

JOHN W. TOMBLER

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"Naturaleza de la Maternidad Divina," in *Estudios Marianos*, Vol. VIII, 1949, p. 68, note 14, quoting Breitung; Roschini, *Mariologia*, Vol. II, Romae, 1947, p. 164; J. Antonelli, *Medicina Pastoralia*, Vol. III, Romae, 1932; C. Feckes, Die Gottesmutterschaft, in P. Sträter, S. J. (Ed.), *Katholische Marienkunde*, Vol. II, Paderborn, 1947, p. 18.

BOOK REVIEWS

Prior, A. N., *Formal Logic*. Oxford: The Clarendon Press, 1955. Pp. ix—329. $ 5.60.

In the preface, the author indicates that this book is designed primarily as a textbook, though he hopes that it will prove to be of interest to others who are not Logic students. The content, which includes; Part I — The Classical Propositional and Functional Calculi; Part II — The Traditional Logic of Terms; and Part III — Modal, Three-valued and Extensional Systems; is of such a nature that it should attract a variety of critico-analytical, perceptive readers other than those solely interested in Logic.

Part I of the triparted arrangement commences with 'Truth-Functions and Tautologies' and is a systematic study of tautologous implications derived from fixed rules of transformation or inference and their relation to systems of tautologous alterations and conjunctions. In the axiomatizations of the Propositional Calculus to obtain a mechanical accuracy, a rigorously fixed symbolism is employed to express the laws laid down and established, as well as to represent the processes of proof. Using axioms and rules the author shows that these axioms are 'complete' and sufficient, not only to prove all tautologous formulae in the propositional calculus, but also to disprove all non-tautologous ones. Besides the fundamental axioms found in the *Principia Mathematica* of Whitehead and Russell, the newer and more economical ones derived by Lukasiewicz, and Hilbert and Ackerman are employed.

In answer to the question 'Why should the logician, whose primary interest is in inference, study other tautologous formulae beside those which are implications?', the chapter entitled 'System with Propositional Constants and Functional Variables', is an attempt to show that all other tautologous formulae *are* either implications or definitional abbreviations for them. In defense of this thesis there are sections about The Implicational Calculus and Wajsberg's System in C and o; Quine's Completeness Proof for the Full Calculus; Wajsberg's Completeness Proof for the Restricted Calculus; and Logic, Metalogic, and the Functorial Variables.

Especially well expressed and explained in connection with the Theory of Quantification is the portion of the text on propositional operators, which form propositions, not out of other propositions, but out of names. The author illucidates the manner in which these new types of propositional formulae are introduced, and substituted for propositional variables in theses of the propositional calculus. With keen and astute logical acumen, he draws attention to the fact that there is a close resemblance (1) between the laws of equipollence and the principles now known as de Morgan Laws; and (2) between universal quantification and conjunction, and existential quantification and alteration.

A. N. Prior's critical ability is especially pronounced in connection with 'Quantification and Equivalential Calculi: Definition Re-examined.' The work on extension, by the use of quantifiers and functional variables, of versions of the propositional calculus in which the only undefined truth-factor is E, 'If and only if,' includes the interesting note that Leśniewski's special interest in a protothenic with an 'equivalential' basis arose from the personal view that he held about the nature of definition in formal systems. The author's account of definitions as assertions of equivalence include the contributions of Leśniewski, Tarski and Sobociński, who espoused the theory in its entirety, and of Lukasiewicz and Meredith, who partially adopted it. Despite the opinions of this distinguished company, the author clearly states that the conclusion of the account is wrong-headed and he shows that it makes it difficult to distinguish the definitions of a system from additional axioms.

Indeed worthy of critical study, is Part II which is a truly remarkable synthesis of the Traditional Logic of Terms, that commences with the Aristotelian Syllogistic; is followed by a comprehensive treatment of Categorical Forms with Negative, Complex, and Quantified Terms; and concludes with Singular and Existential Propositions. When Professor Prior discusses Singulars and Generals in Traditional and Modern Logic, he explains with keen perception that there is a large element of anachronism in attributing to Aristotle any satisfactory way of interpreting his forms in the modern functional calculus and at the same time 'saving' all or most of his laws.

The elaborate body of thought of the older logicians which was built up by introducing one complication after another into the elementary theory of the categorical syllogism is succinctly summarized and followed by an equally brilliant section that explains the achievements of modern logicians who have built up an elaborate body of thought by introducing one complication after another into the elementary propositional calculus.

In connection with Modal, Three-Valued and Extensional Systems the author has handled Deontic Logic in an especially skillful manner. Von Wright's studies of 'deontic' and 'epistemic' modes, and also Thomas' and Bocheński's studies of 'theological' modes are covered and to illustrate how non-logical modes can be handled logically in formal calculi, three of them — 'obligation', 'permissible' and 'forbidden' are set-up in a square of opposition and equipollence in exactly the same way as modal and quantified forms are handled.

In the greater part of the book the symbolic notation of Lukasiewicz is used because A. N. Prior seems to think that it is the best symbolism for most purposes. However, in Part III, Chapter III on 'Iterated Modalities', the notation of the *Principia Mathematica* is employed since in this particular field there is no other as fully developed or as deservedly well known. Because the preponderance of the work is in the modified Lukasiewicz' notation, we feel that it will be less accessible to many readers because this system, particularly in the United States, is not the one in general use.

The *Formal Logic* by A. N. Prior is a work that will take its place as a definitive text along with the *Principia Mathematica* and it is certainly one of the most outstanding works on Logic of our day. Two excellent appendices,

the first of which includes 'Postulate Sets of Logical Calculi' and the other which is a 'Select Bibliography' are extremely well compiled and will be a valuable aid to scholars. The work is also well indexed.

SR. M.ANTHONY BROWN, O. S. F.

The Franciscan Institute

Coiteux, P. Ferdinand, O. F. M. *Le Christ Rédempteur d'après Saint Antoine de Padoue.* Montreal: Editions Franciscaines, 1955. 303 pp.

This volume is the publication of a series of talks given over the radio in Canada. The programs were carried by station CKCV in Quebec on Sunday, and CKAC on Tuesday during 1953 and 1954. St. Anthony's prologue, and sermons for the Sunday within the octave of Christmas, the feast of the Exultation of the Holy Cross, the Resurrection, Ascension, and Pentecost as found in the Locatelli edition furnish the inspiration and substance of these talks.

The author has made use of the *Sermones* of Saint Anthony in just the way they were intended, that is, as material to be adapted and developed into sermons. The thought of Anthony is retained and adapted along with an excellent point well made, the spirit of Saint Francis as brought out by Saint Anthony.

This is not a translation of Saint Anthony's works, but the author quotes Anthony frequently. The plan of the author is to present his part in plain print, Saint Anthony's words in italics, and Sacred Scripture in bold face type. In some instances, however, as on pages 109, 117, and 126, what is obviously the author's comment is placed in italics.

The spirit of Anthony's writing is well preserved in that the author has made, as Anthony did, abundant use of the Old Testament. A further indication that Father Coiteux has captured the Anthonian method is the fact that he concluded each broadcast with a prayer to Saint Anthony (except p. 178 where he uses the last stanza of the Canticle of the Sun) summarizing the thought of the sermon. Saint Anthony in his *Sermones* used the same technique since he concluded individual clauses with prayers addressed especially to Christ.

This work further portrays the dogmatic Christocentrism of the Saint, and stresses the moral teaching of the Saint on poverty and humility, and against avarice.

Père Coiteux is not a newcomer in print. He has published some 16 works. Several others of them are based on the writings of Saint Anthony, and all of them have that Franciscan flavor.

JUNIPER M. CUMMINGS, O. F. M. CONV.

Assumption Seminary
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William Heytesbury, Medieval Logic and the Rise of Mathematical Physics. By Curtis Wilson. (Madison, Wisconsin: The University of Wisconsin Press, 1956. Pp. xii—219. $ 4.00).

Dr. Curtis Wilson's critical and analytical study of William Heytesbury's *Regule solvendi sophismata* makes accessible the views of that gifted member of an influential group of logicians and mathematicians at Merton College, Oxford in the first half of the fourteenth century. Heytesbury's *Regule* and the *Liber calculationum* of Richard Suiseth (Swineshead) represent the apex of the logical and mathematical discussions about physical problems and these works were influential throughout Europe from about 1350 to the critical years of the sixteenth century. The *Regule* was produced for the use of first-year students in logic and for over a century and a half it was the subject of commentary. It presents a late medieval synthesis of logic, mathematics and physics. This is of current interest, particularly in view of the recent trends, which have weakened the connection between mathematics and physics by turning away from the roots of mathematics anchored in intuition, so that there has been a concentration on refinement and an emphasis on the postulational side of mathematics that has at times disregarded, or at least overlooked, the unity of science with mathematics. Not too infrequently have present-day physicists ceased to appreciate the role of mathematics and this rift has unquestionably posed a threat to science as a whole and resulted in divergent and unconnected trends that do not further the organic development of research. Heytesbury's *Regule* with its logico-physicomathematical emphasis, points out the regard of the Schoolmen for the unity of scientific and mathematical knowledge.

The source of the physical aspects of the problems dealt with in the *Regule* is to be found in Aristotle's *Physica* and *De caelo*. Heytesbury's contribution lies in the fact that he employed the devices and distinctions of logic to the mathematization, although it was done verbally, of the physical problems indicated in short passages from Aristotle.

Despite the fact that the physical problems covered by Heytesbury are advanced *secundum imaginationem* and remain without empirical application they are surprisingly close to some of the portions of Mathematical Physics found in textbooks, few in number to be sure, printed today about five hundred years after his death.

Pertinent to the twentieth century physicist is the treatise *De Maximo et Minimo* which presents the Aristotelian and Scholastic notions about debilitable potencies. Within this same tract is something to engage the mathematician, too; for Heytesbury here develops his views on the types of boundaries. His work in kinematics is of particular interest to both the physicist and the mathematician. Without a knowledge that is available now of a simple mathematical algorithm, Heytesbury attempted to solve by verbal means, problems regarding velocity in local motion as well as intention and remission of such velocity. As Dr. Wilson points out, Heytesbury's analysis of the instantaneous in motion and time "goes about as far as it is possible to go by purely verbal means and without recourse to the symbolic techniques of the calculus." The *Regule* shows that its author was aware of the ascendency

involved in the series with the component members: distance traversed, velocity and acceleration. In *De Tribus Predicamentis* he explains in what terms the velocity of augmentation is to be measured. In addition to his own opinion, he also gives the contrary view of Calculator as expressed in Tractatus VI, "De augmentione" in *Liber calculationum*.

Dr. Wilson's exposition of the Doctrine of Supposition, the Doctrine of Exponible Terms, and the Distinction between Composite and Divisive Sense are of import to those who pursue medieval studies in general and to those who investigate medieval logic in particular.

The painstaking study of Dr. Wilson is appendixed by fifty-two pages of valuable notes and by an extremely complete bibliography. Aside from one or two minor inaccuracies the book is remarkably exact, and gives ample evidence that Dr. Wilson used profitably the Fulbright Fellowship (1950—1951) which made it possible for him to view the many manuscripts and texts, the contents of which, he describes in his scholarly volume.

Sr. M. Anthony Brown, O. S. F.

Franciscan Institute

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Baer, Kurt, *The Treasures of Mission Santa Inés.* A History and Catalog of the Paintings, Sculpture, and Craft Works, 323 pp.; Fresno, Cal.: Academy of California Church History, 1956.

Betz, Eva K., *Knight of Molokai.* Illustrations by June Driscoll, VII—154 pp.; Paterson, N. J.: St. Anthony Guild Press, 1956.

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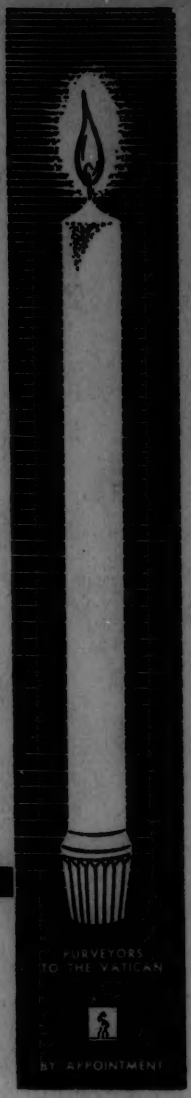
For more than 100 years, the candle craftsmen of Will & Baumer have served faithfully the clergy and religious of America . . . building a reputation for integrity that time and chance have never shaken.

Science and supervision have played a part in insuring purity of materials and perfection of product, but above all stood a tradition of craftsmanship and personal responsibility, binding workers and management alike to quality standards that would brook no compromise.



Will & Baumer

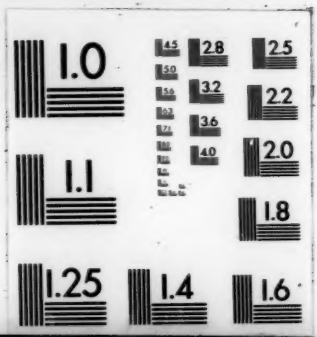
ESTABLISHED 1855

CANDLE COMPANY, INC.

Syracuse, N. Y.

The Pioneer Church Candle Makers of America

BOSTON • NEW YORK • CHICAGO • MONTREAL • LOS ANGELES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